

SOBIE : PROCEEDINGS OF ANNUAL MEETINGS 2014

Compiled and Edited by:
Dr. Vivek Bhargava
Alcorn State University

Editorial Assistant:
Akshay Swaraj
Alcorn State University

SOBIE 2014

Proceedings of the Society of Business, Industry and Economics (SOBIE) Annual Meetings April 14 – 17, 2015 Destin, Florida

PAPERS

How Institutional Investors Influence CEO Succession and Compensation.....	4
Container Ship Routing: Panama Canal vs. U.S. Land Bridge.....	10
An Exploratory Investigation of Explanations for the Relative Effectiveness of Employee Recruitment Methods.....	17
A Study of Small Business Information Security in Rural America.....	28
Evaluating Results of a Small Business Security Survey.....	34
Improved Writing Skills: The ‘NEW NORMAL’ for Accounting Students.....	45
The Impact of Work-Life Balance on Entrepreneurial Sustainability.....	67
Improving Shewhart Control Chart Performance Using Two-Stage Sampling.....	109
Occupational Trends in Mass Communication in the Southern U.S.....	117
Probability Distributions: A Comparison for Risk Management Purposes.....	139
Optimal Tariff and Environmental Tax under Mixed Oligopoly.....	152
The Effect of Problem-Based, Experiential Learning on Undergraduate Business Students.....	159
Exploring the Mechanisms and Processes of Authentic Leaders: A Multi-level Qualitative Examination of Leaders and Followers.....	167
Decision Support Systems.....	218
Service Economics – A Brief Look at a New Subject.....	225
ABET Accreditation of IS and IT Programs In 2013.....	241

SOBIE 2014

In-Memory Databases & Complex Event Processing: The Rise of Real-Time Computing with Predictive Analytics.....	250
Does a Pitchers' Height and Weight Impact Performance: Evidence from Recent Major League Baseball Data.....	260
Using the Cloud to Teach ERP.....	277
Factors Affecting Availability Of Comprehensive Care For The Elderly within A State.....	288
The Influence of Cultural Intelligence Intercultural Business Negotiation.....	294
Rankings, Spreads, and Winning BCS College Football Games.....	332
Fraud and the Bankrupting of the Social Security Disability Trust Fund.....	337
The CFO'S Role in the North American Division.....	352
Study Abroad: Who goes, who stays and why	364

ABSTRACTS

An Interview-Based Approach to Assess Readiness for IFRS.....	380
A Gold Price Anomaly.....	381
Corporate Lobbying – The Tradeoff Between Payback, Accountability/Responsibility and Democracy	382
Experiential Learning in a Liberal Arts Business Program.....	383
Comparing the Tax Effects of the Indirect Foreign Tax Credit and the Dividends Received Deduction.....	385
Student Satisfaction, Commitment, and perceptions of learning in online, hybrid vs. web-enhanced course delivery: a measurement invariance model.....	386
Improving Student Financial Behaviors using Financial Literacy Training and Coaching.....	387
Strategic Perspectives on Social Media Driven Entrepreneurship.....	388

How Institutional Investors Influence CEO Succession and Compensation

Kevin Banning

Auburn University Montgomery

Abstract

There is ample evidence of companies dismissing their chief executive officers (CEOs) when financial performance falters. The link to post-succession compensation for CEOs is less well understood. This study examines how CEO succession and compensation differ as function of external ownership. In a sample of 140 publicly-traded firms, we found that compensation systems for new CEOs differed as a function of institutional ownership, with total executive compensation higher and compensation risk lower in firms with lower levels of institutional ownership.

Introduction

Previous research has identified several causes of CEO turnover, such as mergers and acquisitions (Walsh, 1988), but poor firm financial performance is the most common reason (Furtado & Karan, 1990). The consequences of CEO succession, although less conclusive, are also generally well researched. CEO succession is associated with shifts in corporate strategy (Westphal & Fredrickson, 2001) and company financial performance (Ballinger & Marcel, 2010; He, Sommer, & Xie, 2011). There is evidence also that succession shifts the CEO's compensation structure to favor more incentive-pay (Blackwell, Dudney, & Farrell, 2007). However, other authors have found the reverse (Banning, 2013) or no differences (Karaevli, 2007), and these inconsistent results have thus far not been adequately reconciled. The presence of institutional owners, who might serve as effective monitors of new CEOs, could explain the mixed empirical results concerning the compensation consequences of executive succession.

New CEOs who fail to deliver strong or improved financial performance are vulnerable throughout their first few years on the job (Ocasio, 1994), and it would be rational for them to maximize their base and contingent compensation, regardless of the circumstances of the succession. Because executives who serve on the firm's own board are known to contest the new CEO, new chief executives also have strong incentives to maximize compensation if post-succession financial performance is unimproved or the CEO is dismissed for any other reason. Consequently a new CEO has both the incentive, because of contests among board members, and the opportunity, thanks to a brief "honeymoon period" associated with succession (Shen, 2003), to arrange an attractive compensation contract during the transition.

There is some utility in exploring how the compensation structure differs after succession as a way to understand how the new CEO could strengthen his or her position. For example, when there are some equity

holders, such as institutional owners who control large enough blocks of stock to influence management, it seems likely that the compensation contract will be more favorable to the shareholders. The greater oversight by institutional owners could result in lower levels of CEO control as might be seen in more effective compensation contracting and incentive alignment and potentially stronger firm performance.

Agency Theory in Organizations

When viewed through an agency framework, shareholders of public companies contract with managers to act on their behalf, and thus delegate to managers the ability to utilize company resources. Because both the shareholders and managers are thought to be rational, the owners must devise ways to effectively supervise the actions of managers. This supervision typically occurs through the contract which specifies how managers will be monitored or share risks with owners, and effectively aligning owners' incentives for success with managers pay, with tools like performance-contingent compensation. When well constructed and executed, monitoring and incentive alignment support strategic choices which benefit both shareholders and managers.

One solution to the agency problem in organizations is monitoring by individual owners. Individual owners often own too small a position or are otherwise unable or unwilling to carefully monitor managers of companies in which they have ownership (Milgrom & Roberts, 1992). Some researchers (e.g., Schwab & Thomas, 1998) have observed that institutional owners pay more attention to managerial decisions in the firm because the decisions and consequent company performance are critical to their financial holdings. Consequently when those institutional owners act in ways likely to be beneficial to shareholders, markets react positively (Hadani, Goranova, & Kahn, 2011).

While it is clear that there are positive, stock-market effects associated with activism by institutional investors, this activism has produced less consistently positive results with respect to a firm's financial performance, but the finding that performance improvements are associated with investor activism is more common than not (Hadani et al., 2011). With the generally positive performance effects associated with institutional ownership, there may be other consequences of these owners on outcomes favored by shareholders, and one such outcome is CEO compensation.

Creating Incentive Alignment

Agency theory suggests that a new CEO will attempt to negotiate both more total pay and a smaller performance-contingent component of pay than the predecessor CEO, and these conditions are more likely to be granted in the absence of institutional owners. Previous research suggests CEO pay for incumbent CEOs will be lower overall and favor performance-contingent forms of pay when the proportion of institutional investors is higher (David, Kochhar & Levitas, 1998). Similarly previous research suggests that new CEOs receive compensation packages favoring incentive pay instead of guaranteed forms of compensation (Blackwell et al., 2007), but whether the presence of institutional ownership affects the compensation structure has yet to be tested with the compensation of new CEOs.

There are impediments to proper management control in modern corporations, as well as reduced incentives for monitoring by singular, individual owners, and consequently a new CEO could negotiate a compensation contract with more total pay and less risk. The greater levels of total compensation and their smaller proportions of performance-contingent pay are negotiated with the board upon succession. This kind of contract, highly favorable to the incoming CEO, is possible because of the relative weakness of managerial oversight in firms with no strong institutional investors. Any weakness in managerial oversight might be exploited at the time of succession, and the new CEO may achieve an attractive compensation package.

H1: The level of post-succession CEO compensation will be greater in firms with lower institutional holdings.

H2: The level of post-succession CEO compensation risk will be smaller in firms with lower institutional holdings.

Method

The COMPUSTAT database provided the financial data and succession events were identified in the *Wall Street Journal*. Initially there were 159 publicly-traded firms experiencing a single succession event during the event period from 2006 to 2010. At five years, the succession-event window was short enough to attribute effects to the new CEO and not to exogenous events, yet long enough to capture enough succession events for statistical purposes. No firms experiencing multiple succession events during the five years, or firms with a CEO succession in the four years immediately preceding the window, or in the year following the window were included. Including companies with multiple successions, with the associated negotiations of the compensation contracts, would have unnecessarily muddled the analysis and hypothesis tests. Ultimately there were 140 firms across the five years with fully usable data. Using a fixed-effects specification, where a dummy variable represents the year of the succession event to test the hypotheses, permitted robust testing but was simple to operationalize.

Dependent Variables

The first dependant variable, total CEO compensation, was determined from proxy statements for the year following appointment. Total CEO compensation was comprised of all forms of pay reported in the proxy statement, including the Securities and Exchange Commission (SEC) estimate of the present value of stock options received (David et al., 1998). Despite the difficulty in estimating the present value of stock options, the nearly ubiquitous use of stock options as a large part of the total CEO compensation package justifies their inclusion. The second dependent variable is a measure of compensation risk that is computed as the proportion of total pay that is performance contingent (Westphal & Zajac, 1997).

Both dependent variables are adjusted for mean values of their corresponding four-digit SIC industry for the first full year following the succession event. This is the observed value minus the industry mean. In a conceptual sense, correcting the observed-value of each firm's total compensation and compensation risk with the mean of the relevant industry creates a value of each dependent variable that controls for any industry-effect. Thus in the case of Total CEO Compensation, positive differences indicate that the CEO for that firm received more than the industry average total pay, and negative differences indicate that the firm's CEO received total pay less than the relevant industry average. The computation for compensation risk and for firm performance works in the same way. This method permits controlling for industry effects in the regression without the corresponding loss of degrees of freedom (Hoskisson, Johnson, & Moesel, 1994).

Independent and Control Variables

This research addresses the question of whether a sufficiently powerful institutional owner affects the negotiated agency contract for a new CEO. The agency contract, including the compensation component, would be expected to differ in firms where the CEO exercised more control relative to the board of directors, which represents owners. Researchers seem to agree that effective oversight of managers is associated with several important consequences, but there is less consensus as to how to operationalize the influence of institutional owners. This paper uses an institutional ownership measure after Hadani et al. (2011), which takes the percentage of outstanding shares held by the single largest institutional owner. The measure has gained currency based on earlier findings suggesting that only the largest institutional owner would likely possess any information advantage (Schnatterly, Shaw, & Jennings, 2008).

The influence exercised by institutional owners is only one possible reason that compensation contracts for CEOs might differ among firms. There are other firm-specific variables that might affect the contract, such as the size of the company, whether the new CEO came from within the firm, and the conditions under which the previous CEO exited the position. These five influences are treated as control variables. Firm size is operationalized as the natural log of annual revenues reported for the first full year of the successor CEO's tenure. The second of the five control variables, new CEO's origin, was determined by the last employer prior to becoming the CEO at the focal firm (Karaevli, 2007). If that

position was held anywhere other than the focal firm or its subsidiaries, successor origin was one. If the successor CEO was promoted from within the firm or any of its subsidiaries, successor origin was zero.

Among the last three control variables is disposition of the predecessor CEO. In assessing the predecessor's disposition in text sources, such as the company proxy statement and the *Wall Street Journal*, if these were clear the predecessor had voluntarily retired, died, or had voluntarily taken another position, or if it was unclear despite multiple sources, this variable was coded as zero. Only if it was clear that the predecessor was forced to resign, retire, or was dismissed, this variable was coded as one. The fourth control variable was company performance preceding the succession event and was measured as the firm minus industry average of the company's return on investment in the last full year preceding the succession event. The last control consisted of a four dummy variables for years two through five of the five-year pool. The data cover a five-year span so the specification used the control variable to capture any unique variance for a particular year in the regression specification.

Analysis

The hypotheses were tested in three pooled regression analyses. The first specification regressed total CEO compensation on the independent and control variables, while the second specification regressed compensation risk, which is the ratio of performance-contingent pay to total pay earned in the first full year after succession, on the same set of independent and control variables. The third specification regressed post-succession firm performance on the independent and control variables.

Results

Descriptive statistics and intercorrelations for the study variables appear in Table 1.

The regression results for total CEO compensation appear in Table 2. Only standardized regression coefficients are reported in the tables for the sake of comparability. Hypothesis 1, which predicted that the level of total CEO pay would be higher in firms with lower levels of institutional ownership, was supported. Higher levels of CEO compensation were also associated with pre-succession firm performance. The regression results for compensation risk also appear in Table 2. Hypothesis 2, which predicted that the level of CEO compensation risk would be lower in firms with lower levels of institutional ownership, was supported. When the predecessor CEO was forced out, pay risk was also higher.

Discussion

This research suggests that the influence of institutional owners matters to the nature and consequences of the compensation contract that is negotiated with new CEOs. It appears that new CEOs who face relatively weaker institutional-investor oversight are able to negotiate more favorable compensation contracts, in terms of both size and risk. Though there are potentially many circumstance which would permit a new CEO to strike a more favorable compensation contract, a lack of institutional ownership appears to matter a great deal. It is important for new CEOs to negotiate an attractive compensation

SOBIE 2014

package, because in their early years as chief executive they are subject to competition from colleagues on the board of directors (Ocasio, 1994).

Other than the influence of an institutional owner and the predecessor's involuntary dismissal, compensation contracts did not seem to vary based on the circumstances surrounding the succession events. In terms of company financial performance, only influence of an institutional owner and successor CEOs from outside the firm were significant influences.

The Effects of Institutional Ownership

The ways in which new CEOs negotiate their compensation contracts appears to differ based on the firm's institutional ownership. CEOs in firms with lower levels of institutional-owner influence were able to achieve less compensation risk than new CEOs in firms with higher levels of influence exercised by institutional owners. These differences in compensation and risk-sharing may account in part for the finding that firms lacking significant institutional ownership do not perform as well as those featuring more institutional ownership, a result consistent with other work that shows that greater institutional ownership is associated with better financial performance (Hadani et al., 2011).

The compensation contract, and in particular the arrangements with respect to how contingent pay is earned, is the primary means shareholders have to align managers' interests with their own. CEOs in firms with less significant institutional ownership appear to receive higher pay and less compensation risk in their negotiated contracts, while successor CEOs in firms with significant institutional ownership experience higher compensation risk. These results suggest managers in firms with low levels of institutional have more influence over the structure and magnitude of their pay.

Though no direct effects were tested, it may be that the negotiated agency contract impacts the firm's financial performance. In firms with less institutional ownership, where the new CEO may have more influence relative to the board of directors, financial performance is lower than in firms with significant institutional ownership. The overall results suggest that the relatively greater influence of the new CEO under low levels of institutional ownership, as reflected in the terms of the compensation contract negotiated at succession, is one possible reason for the positive association of institutional ownership and financial performance.

Negotiated Compensation Terms

Though institutional owners appear to influence the compensation terms of the agency-contract negotiated with the board of and the incoming CEO, such that when institutional ownership is small the successor CEO captures a more favorable compensation contract, at least one other factor during succession seems to impact the compensation-package negotiation as well. The disposition of the previous CEO seems to have some effect on the compensation arrangements. New CEOs who followed one who was dismissed received proportionally more pay which was performance contingent, shifting more of the firm's future performance risk to the new CEO. Compensation terms shifting pay risk to the new CEO represent a

SOBIE 2014

reasonable response by firms that have dismissed their previous chief executive, because increased pay-risk signals the board's demand for better future performance.

Ultimately, the compensation contract terms seem to depend on the interplay between an incoming CEO, institutional owners, and the board of directors. The directors appear to be able to create terms more favorable for shareholders when institutional owners have more influence on the firm. When managers exercise more control, however, the evidence suggests that shareholder interests may be traded for managerial compensation. Firm performance following succession may thus depend more on who controls the contracting process than on characteristics of the incoming CEO.

References

Ballinger, G. and J. Marcel. "The use of an Interim CEO During Succession Episodes and Firm Performance" *Strategic Management Journal*, 2010, Vol. 31, 262-283.

Banning, K. "Shareholder Wealth Effects of CEO Turnover" *American Journal of Industrial and Business Management*, 2013, Vol. 3, 583-588.

Blackwell, D., D. Dudney and K. Farrell. "Changes In CEO Compensation Structure and the Impact on Firm Performance Following CEO Turnover" *Review of Quantitative Finance & Accounting*, 2007, Vol. 29, 315-338.

David, P., R. Kochhar and E. Levitas. "The Effect of Institutional Investors on the Level and Mix of CEO Compensation" *Academy Of Management Journal*, 1998, Vol. 41, 200-208.

Furtado, P. and V. Karan. "Causes, Consequences, and Shareholder Wealth Effects of Management Turnover: A Review of the Empirical Evidence" *Financial Management*, 1990, Vol. 19, 60-75.

Hadani, M, M. Goranova and R. Kahn. "Institutional Investors, Shareholder Activism, And Earnings Management" *Journal Of Business Research*, 2011, Vol. 64, 1352-1360.

He, E., D. Sommer and X. Xie. "The Impact of CEO Turnover on Property-Liability Insurer Performance" *Journal of Risk and Insurance*, 2011, Vol. 78, 583-608.

Hoskisson, R., Johnson, R. and D. Moesel. "Corporate Divestiture Intensity in Restructuring Firms: Effects of Governance, Strategy, and Performance" *Academy of Management Journal*, 1994, Vol. 37, 1207-1251.

Ocasio, W. "Political Dynamics and the Circulation of Power: CEO Succession in U.S. Industrial Corporations" *Administrative Science Quarterly*, 1994, Vol. 39, 285-312.

Karaevli, A. "Performance Consequences of New CEO 'Outsiderness': Moderating Effects of Pre- and Post-Succession Contexts" *Strategic Management Journal*, 2007, Vol. 28, 681-706.

SOBIE 2014

Milgrom, P. and J. Roberts, “Economics, Organization and Management,” Prentice Hall, Englewood Cliffs, NJ, 1992.

Schnatterly, K., K. Shaw, and W. Jennings. “Information Advantages of Large Institutional Owners” *Strategic Management Journal*, 2008, Vol. 29, 219-227.

Schwab, S. and R. Thomas. “Realigning Corporate Governance: Shareholder Activism by Labor Unions” *Michigan Law Review*, 1998, Vol. 96, 1018-1155.

Shen, W. “The Dynamics of the CEO-Board Relationship: An Evolutionary Perspective” *Academy of Management Review*, 2003, Vol. 28, 466-476.

Walsh, J. “Top Management Turnover Following Mergers and Acquisitions” *Strategic Management Journal*, 1998, Vol. 9, 173-183.

Westphal, J. and J. Fredrickson. “Who Directs Strategic Change? Director Experience, the Selection of New CEOs, and Change in Corporate Strategy” *Strategic Management Journal*, 2001, Vol. 22, 1113-1137.

Westphal, J. and E. Zajac. “Defections from the Inner Circle: Social Exchange, Reciprocity, and the Diffusion of Board Independence in U.S. Corporations” *Administrative Science Quarterly*, 1997, Vol. 42, 161-183.

Table 1

Descriptive Statistics and Intercorrelations

Variable	Mean	S.D.	1	2	3	4	5	6	7
1. Firm size	3.03	1.51							
2. Lagged performance	4.11	5.10	.06						
3. Origin	.80	.12	-.03	-.04					
4. Disposition	.42	.46	.03	-.16	.19*				
5. Total compensation	11.7	1.36	.38**	.02	.14	.03			
6. Compensation risk	.69	.25	.12	.17	-.05	.09	.73**		
7. Institutional owner	.10	.04	-.18*	.03	.08	.11	-.22*	.19*	

Note: * p< .05 ** p< .01

SOBIE 2014

Table 2

Regression Results

	Total compensation		Compensation risk	
	β		B	
Firm size	.389**	.351	-.131	.047
<i>Lagged performance</i>	.162*	.278	.068	.202
Origin	-.006	.054	.029	.001
<i>Disposition</i>	-.050	.125	.156*	.023
Institutional owner	-.194*	.069	.207*	.182

Container Ship Routing: Panama Canal vs. U.S. Land Bridge

Robert F. Cope III, Southeastern Louisiana University
Rachelle F. Cope, Southeastern Louisiana University
John M. Woosley, Southeastern Louisiana University

Abstract

In our work, we investigate choices for container ship transportation from the eastern Pacific to the western Atlantic based solely on time. Choices include traveling through the Panama Canal or using the U.S. as a land bridge (via truck and rail car). A breakeven methodology, given vessel size, is employed to discriminate between paths. Interested parties of our work might include those investigating multi-modal integration opportunities, those seeking transportation efficiencies in water, truck and rail, and students as a case assignment in Transportation and Logistics courses.

Introduction

A new era in container shipping is coming. The Panama Canal Authority is about to complete a third lane to the water-way that will double its capacity and allow access to the largest cargo-carrying vessels. However, the impact that the canal will have on global trade patterns remains to be seen. Roughly 65% of the goods sailing through the canal go to or from U.S. ports, and those ports and American rail-yards that compete with the canal will fight to retain as much business as possible (Lynch, 2009). Cargo from Asia, for example, can reach U.S. markets either through the canal or by docking at a west coast port and riding rail lines to inland or east coast destinations.

The issues of container transportation traffic and timely route choice are ones that increase in complexity, as opportunities for trade expand and supply chain activities evolve internationally. Today's container traffic moves mostly from the Far East to the U.S., Europe and other western ports. Two routes of choice have evolved over time. One is through the Panama Canal, and the other uses the United States as a land bridge where container ships dock on the west coast, unload, then travel by truck and/or rail car to the east coast and are loaded onto other container ships headed across the Atlantic.

Time is the variable of most importance in our work, as time is the common denominator to both distance and cost in this industry. "Estimated Time of Arrival (ETA)" is the cry of many ship captains and

SOBIE 2014

others in the industry, making time of arrival, dock time, and time of departure very important parameters in the shipping industry.

Our work begins with an explanation of how the U.S. is used as a land bridge. We then discuss how poor port productivity and congestion create dead time for vessels that end up waiting in a queue for service. We then give careful consideration to the impact of the Jones Act in restricting U.S. maritime commerce. Next, we discuss how canal expansion in Panama stands ready to alleviate port productivity and congestion problems by moving cargo to other areas for dispersion. Finally, we move to the development of our modeling methodology for determining best choice routing – through the Panama Canal or the U.S. land bridge.

The U.S. Land Bridge and West Coast Port Traffic

European bound cargo from Asia has several options for reaching its destination. One would be to go west over many treacherous mountain ranges and several seas. Customs stops are required by many countries along the route, making the trip quite long and segmented. Another route would be to go east across the Pacific Ocean, cross the U.S. by rail or highway, then cross the Atlantic Ocean to reach Europe. This path takes the freight through only one country, requiring only one customs checkpoint. It is obvious that the second option may be longer in miles, but stands to be shorter in time, prompting those in the global transportation industry to refer to it as a “land bridge” across the U.S. When time is the important factor, the U.S. “land bridge” is the option many use. However, there is one bottleneck along the way – the U.S.’s west coast ports.

The Ports of Los Angeles and Long Beach are the first and second busiest container ports in the U.S, respectively. The Port of Los Angeles is located just north of the Port of Long Beach on the California coastline. Together, the two ports are known as the San Pedro Bay Ports. These two ports handle more than 40% of the nation’s total containerized cargo import traffic and 24% of the nation’s total exports (Port of Long Beach, 2007). Combined, the San Pedro ports moved 1.16 million containers in January 2012, up from 1.14 million a year earlier (White, 2012).

In turn, the large amount of cargo traffic has led to a rise in congestion at the two bustling ports. Such deep draft ports experience delays as space for increasing volumes of import and export cargo is limited by environmental and community concern factors. Congestion also occurs when vessels arrive at the same time rather than dispersed throughout the week (U.S. Department of Transportation, 2009). The time lost as a result of this bottleneck can be 3 to 6 days depending on the season (Conway Consulting, 2008). Even when ports can berth and unload ships quickly, the increasing size of container ships is moving congestion from ports to access roads, rail and highways (U.S. Department of Transportation,

SOBIE 2014

2009). Such delays and congestion at the Long Beach and Los Angeles ports have shippers and receivers looking for more reliable, efficient options for transportation.

The Jones Act

The Merchant Marine Act of 1920, commonly referred to as the Jones Act, is a U.S. Federal statute that regulates maritime commerce in U.S. waters and between U.S. ports (Brackins, 2009). Two parts of the Jones Act are of specific importance. The first part heavily supports American built, owned, and staffed ships. This was accomplished by restricting shipping and passenger trade within the U.S. to American-owned or American-flagged ships, and specifying that at least 75% of a ship's crew must comprise American citizens. In the second part of the Jones Act, the use of foreign parts and labor in ship construction and repair was also greatly restricted. This section of the Jones Act was created to produce a strong, well staffed merchant marine that could be responsible for efficiently serving the U.S. (Smith, 2010).

It is important to realize that at the time the Jones Act was enacted, a strong, resilient merchant fleet was crucial for a country's success and commerce. Today, the effects of the Jones Act have been felt widely in the shipping industry as foreign cargo vessels are not allowed to travel port-to-port in the U.S. – they must drop off and pick up only. In comparison to other nations that lack such cabotage restrictions, there has been a noticeable decline in the U.S. shipping fleet, losing out to the competition of other nations using alternate routes (Brackins, 2009).

The Panama Canal

The Panama Canal opened in 1914 and instantly revolutionized water transportation. For ships steaming between California and the east coast of the U.S., the canal turned a 15,000 mile journey around Cape Horn into a relatively swift 6,000 mile jaunt (Lynch, 2009). The current expansion includes dredging the existing channel to the depths needed for the largest cargo vessels. Table 1 contrasts the lock dimensions of the original canal lanes and the new lane.

Table 1

Panama Canal Lock Comparisons (Panama Canal Authority, 2006)

Dimensions	Current Locks	Panamax	New Locks	New Panamax
Length	320.04 m (1,050 ft)	294.13 m (965 ft)	427 m (1,400 ft)	366 m (1,200 ft)
Width	33.53 m (110 ft)	32.31 m (106 ft)	55 m (180.5 ft)	49 m (160.7 ft)

SOBIE 2014

Draft	12.56 m (41.2 ft)	12.04 m (39.5 ft)	18.3 m (60 ft)	15.2 m (49.9 ft)
TEUs		5,000		12,000

The centerpiece of the expansion is the pair of massive new locks at the Pacific and Atlantic canal entrances. Today, the largest ships that can use the canal are the *Panamax* class, capable of carrying about 5,000 standard shipping containers. They squeeze through the waterway's 110-foot-wide locks with just 2 feet to spare on either side (Lynch, 2009). Wider, deeper and longer than the existing portals, the new locks will handle a class of bigger ships known as *New Panamax* vessels, the world's largest cargo carriers, which can haul more than twice as many containers.

Methodology for Route Choice

The methodology for route choice compares the sum of expected times and deviations from an import point to an export point on each side of the U.S. land bridge against the sum of expected times and variances using the Panama Canal. It is straightforward, but based on several assumptions:

1. Cost is not an issue. Any costs that arise will be passed on to the customer.
2. Import and export container ports work around the clock for loading, unloading, sorting, and preparing for additional container transportation.
3. There is adequate rail and highway infrastructure support, and an ample supply of trucks and rail cars to ferry containers across the U.S.
4. Containers vessels of similar size are waiting at east coast ports to complete the journey.

Our expected time functions and three step methodology follows.

Calculation of Expected Travel Time across U.S. Land Bridge (μ_{lb})

$$\mu_{lb} = (t_i + t_r + t_t + t_e) + \sigma_{lb} \quad (\text{Eq. 1})$$

SOBIE 2014

Where t_i = time at an importing port; t_r = time on a rail car; t_t = time on a truck, and t_e = time at an exporting port. A similar structure is used to determine the variance for the land bridge.

$$\sigma_{lb}^2 = (\sigma_i^2 + \sigma_r^2 + \sigma_t^2 + \sigma_e^2) \quad (\text{Eq. 2})$$

Calculation of Expected Sailing Time via the Panama Canal (μ_s)

$$\mu_s = (t_{ie} + t_{pc}) + \sigma_s \quad (\text{Eq. 3})$$

Where t_{ie} = sailing time from an import point to an export point, and t_{pc} = time through the Panama Canal. A similar structure is also used to determine the sailing variance.

$$\sigma_s^2 = (\sigma_{ie}^2 + \sigma_{pc}^2) \quad (\text{Eq. 4})$$

Step 1: Evaluation of Time based on Container Ship Size

Using equations 1 & 2, determine the expected total travel time across the U.S. land bridge from import point to export point for each container ship size of interest. Placing this data in a table may help during analysis.

Step 2: Evaluate Sailing Time using Panama Canal

Using equations 3 & 4, determine the necessary sailing time through the Panama Canal traveling from the same import and export points selected earlier. This value should be valid for any size vessel.

Step 3: Analysis

Inspect the container ship-land bridge travel times for a “breakeven” point created by the travel time through the Panama Canal. Linearly interpret the “breakeven” vessel size. Assign smaller ships to the U.S. land bridge and larger ships to the Panama Canal route. Total travel time should be minimized for a given size vessel.

Conclusions and Further Study

After reviewing the Panama Canal’s exciting expansion news, we find that the U.S. transportation industry is poised for a revolution in container cargo movement in the near future. We studied the choice between traveling the U.S. land bridge or the Panama Canal using only one west coast and one east coast port – abiding by Jones Act restrictions. However, other maritime and Canadian opportunities may exist in the future creating a network of routes from which to choose.

Through the methodology presented here, we have been able to discriminate between route choices for container vessels based solely on ship size and time. In future research, we plan to explore more of the economic effects on commerce associated with shifts to and from the land bridge and the canal. The objective is to transfer a “perfect” shipment from point A to point B as cheaply, quickly and consistently as possible (Bowersox, et al., 2010). However, in the long run we expect that delivery speed (time) will still be the variable of interest in the shipping industry.

References

Bowersox, D., D. Closs, and M. Cooper. *Supply Chain Logistics Management*, 3rd edition, McGraw-Hill Irwin: Boston, Massachusetts, 2010.

Brackins, D. “The negative effects of the Jones Act on the economy of Hawaii.” 2009, retrieved July 25, 2010, from <http://www.hawaiilibertychronicles.com/?p=2237>.

Conway Consulting. “Cargo Case Study - Port San Antonio.” 2008, retrieved November 22, 2011, from <http://www.portsanantonio.us/StoreImages/collateral/lazarocardenas-pg1-2.pdf>.

Lynch, D. “For Panama Canal, a new era of trade is coming.” *USA Today*, 1A & 6A, August 6, 2009.

SOBIE 2014

Panama Canal Authority (Canal De Panama). *Master Plan 2005-2025 Report*. 2006, retrieved September 15, 2011, from <http://www.pancanal.com/eng/indx.html>.

Port of Long Beach. "Ports impact on economy growing." 2007, retrieved November 10, 2011, from <http://www.polb.com/news/displaynews.asp?NewsID=137>.

Smith, S. "What is the Jones Act?" *WiseGeek*. 2010, retrieved July 13, 2010 from <http://www.wisegeek.com/what-is-the-jones-act.htm>.

U.S. Department of Transportation. *Freight Management and Operations*. 2009, retrieved October 20, 2011 from http://ops.fhwa.dot.gov/freight/freight_analysis/freight_story/congestion.htm.

White, R. "L.A., Long Beach ports complex posts best January since recession." 2012, retrieved January 30, 2012, from <http://www.latimes.com/business/la-fi-ports-20120216,0,2446476.story>.

An Exploratory Investigation of Explanations for the Relative Effectiveness of Employee Recruitment Methods

Mel Schnake

Valdosta State University

Abstract

Employee recruitment has become increasingly important to managers in recent years as some occupations face severe shortages and others experience surpluses. Both types of human resource gaps place more pressure on recruitment to provide the right numbers of employees with the required knowledge and skill sets. This increased importance to practitioners has led researchers to pay more attention to it as well (Billsberry, 2007; Breaugh, Macan & Grambow, 2008).

Previous research suggests that informal recruiting methods (e.g., employee referrals, walk ins) are more effective than more formal recruiting methods. Two explanations have been offered for the relative effectiveness of recruiting methods. The “realistic information hypothesis” suggests that employees recruited via the more effective methods may have acquired a greater quantity of information, more accurate information, and/or more realistic information (Breaugh, 1981; Zottoli & Wanous, 2000). According to the “individual difference hypothesis” (Saks, 2005), different recruiting methods may attract different types of applicants (Schwab, 1982). There is some empirical support for both hypotheses.

Blau (1990) suggested that employees hired via different recruiting methods may be treated differently after hire. Barber (1998) reported that she could find no empirical tests of this hypothesis. Research on the post-hire treatment hypothesis is clearly needed. The purpose of this study is to provide an initial test of the “differential management treatment hypothesis.”

Background

Employee recruitment has become increasingly important to managers in recent years as some occupations face severe shortages and others experience surpluses. Both types of human resource gaps place more pressure on recruitment to provide the right numbers of employees with the required knowledge and skill sets. This increased importance to practitioners has led researchers to pay more attention to it as well (Billsberry, 2007; Breugh, Macan & Grambow, 2008).

Research on employee recruitment has focused on recruiting methods or sources, recruiter effects and realistic job previews (Rynes, Bretz & Gerhart, 1991; Barber, 1998). These factors influence different phases of the recruitment process. Barber (1998) has identified three phases of recruitment: generating applicants, maintaining applicant status, and influencing job choice. Different recruiting activities influence different phases of recruitment. For example, choice of recruiting methods (i.e., job fairs, newspaper advertisements) influence the numbers and types of applicants. Tracking and communicating with applicants influence maintaining applicant status.

Within the generating applicants phase of recruitment, one of the most important decisions is choice of recruiting method. Research shows that Bureau of National Affairs study (1988) found that the most commonly used recruitment methods are newspaper advertisements, employee referrals, direct applications, and recruiting at schools (Bureau of National Affairs study (1988; Kalleberg, Knoke, Marsden & Spaeth, 1996; Vecchio, 1995). Several studies have found the relative effectiveness of different recruiting methods to vary across several outcome measures including turnover, absenteeism, job performance, and work attitudes. Ullman (1966) found that employees recruited via informal recruitment sources had lower turnover than employees recruited via formal sources (newspaper ads, employment agencies). Gannon (1971) found that rehires, walk ins, and employee referrals had lower turnover than employees recruited via other methods. Decker and Cornelius (1979) also found employee referrals to be associated with lower turnover than newspaper ads and employment agencies. Breugh (1981) found job performance to be higher for employees hired via advertisements in professional journals and conventions than for employees hired through college placement and newspaper ads.

SOBIE 2014

Absenteeism was higher for employees hired via newspaper ads. Employees hired through college placement had more negative work attitudes than employees hired via other sources. Taylor and Schmidt (1983) examined the relative effectiveness of several recruiting methods and found that rehires had lower turnover and absenteeism than employees recruited via other methods (referrals, newspaper ads, radio ads, television ads, walk ins, and public employment agency). Breugh and Mann (1984), in a survey of social workers, found that direct applicants (walk ins) had high job performance and lower voluntary turnover than employees recruited via other sources (newspaper ads and employee referrals). In a study of bank tellers, Blau (1990) also found walk ins to have higher performance than employees recruited through other sources (newspaper ads, employee referrals and employment agencies). Williams, Labig and Stone (1993) found no recruiting method effects on turnover and job performance in a study of nurses.

These studies suggest that informal recruiting methods (e.g., employee referrals, walk ins) are more effective than more formal recruiting methods. Two explanations have been offered for the relative effectiveness of recruiting methods. The “realistic information hypothesis” suggests that employees recruited via the more effective methods may have acquired a greater quantity of information, more accurate information, and/or more realistic information (Breugh, 1981; Zottoli & Wanous, 2000). For example, employee referrals may provide applicants with a more accurate and realistic picture of the job and the employer. According to the “individual difference hypothesis” (Saks, 2005), different recruiting methods may attract different types of applicants (Schwab, 1982). There is some empirical support for both hypotheses. For example, Kirnan, Farley and Geisinger (1989) found that employees recruited via informal sources (employee referrals) were of higher quality than those recruited via formal sources. Williams, Labig and Stone (1993) concluded that informal recruitment sources reached applicants with more job experience and education which resulted in higher job performance.

Breugh and Mann (1984) conducted a competitive test of these two hypotheses. They examined relationships between recruitment method and performance and turnover. They found that direct applicants performed better and had lower turnover than applicants recruited via other methods (newspaper advertisement, employee referrals). They also measured individual differences including demographics, applicant quality and perceived ease of movement. They also measured employees’ perceptions of how realistic their information about the job and company was at the time of hire. They found that direct applicants reported more realistic information than applicants recruited via newspaper advertisements or employee referrals. In a study of bank tellers, Blau (1990) found that direct applicants had higher performance than applicants recruited via newspaper ads, employment agencies, and employee referrals.

SOBIE 2014

Supporting the individual difference hypothesis, he found that direct applicants had higher ability scores than applicants recruited from other sources. Williams, Labig and Stone (1993) found no differences in turnover and job performance by recruitment sources (employee referral, previous rotation/internship, rehires, campus visits, newspaper advertisements and direct applications). They did, however, find that new hires difference in experience by recruiting source providing some support for the individual differences hypothesis. They also found that new hires differed in terms of pre-hire information, providing some support for the realistic information hypothesis. Werbel and Landau (1996) examined relationships between recruitment sources (newspaper advertisements, self-initiated contact, corporate recruiters, employee referrals, and college placement) and turnover and performance. They found that college placement office hires tended to perform better than employees hired via newspaper advertisements. No other differences in performance or turnover were detected. Comparing new hires' job expectations with opinions of current employees (a test of the realistic information hypothesis) showed that employee referrals had less realistic expectations than did direct applicants or agency hires. Griffeth, Hom, Fink, and Cohen (1997) used structural equation modeling to conduct a competitive test of the two hypotheses. Using a more complete measure of realistic information (expectations, role clarity and coping skills) they found that recruitment source was related to both individual differences and realistic information. However, only realism was associated to post-hire outcomes. They also found that recruitment methods had direct impact on post-hire outcomes beyond the effects of realism, suggesting that the two hypothesis do not explain all the variance in post-hire outcomes.

Additional hypotheses which have been suggested but have not received much research attention include the motivational differences hypothesis and the labor market mobility hypothesis. The motivational differences hypothesis suggests that different recruiting sources may produce applicants with differences in motivation to apply. For, example, it is very easy to apply through an employer's web page which results in many applicants who may not be highly motivated to apply or to seek employment with a specific organization. Other methods, such as direct applications may require greater effort on the part of the applicant suggesting a higher level of motivation to apply for a job with a particular employer. Decker and Cornelius (1979) suggested that employees hired via different recruiting methods may have different perceptions about their ability to find alternate employment. Some recruiting methods may expose applicants to more employment opportunities, leading these applicants to believe they can more easily find another job which, in turn, leads to higher turnover. Finally, Blau (1990) suggested that employees hired via different recruiting methods may be treated differently after hire. Barber (1998) reported that she could find no empirical tests of this hypothesis. Research on the post-hire treatment hypothesis is clearly needed.

Two theories explain differential treatment of employees by leaders. The Pygmalion Effect or Self-fulfilling Prophecy suggests that leaders develop expectations of employees which then affect how the leader reacts to those employees (Eden, 1991). When leaders have high(low) performance expectations of employees they somehow convey those expectations to employees via subtle behaviors, such as spending more time with them, giving them more challenging assignments, and providing more feedback. Employees then work up (or down) to these expectations so that the leader's expectations are fulfilled. The Leader-Member Exchange Theory of Leadership suggests that leaders classify employees into "in-groups" or "out-groups." In-group members receive more of the leader's time and attention, better task assignments, and more information.

The Leader-Member Exchange (LMX) model of leadership developed out of the Vertical Dyad Linkage Model of Leadership and suggests that leaders classify followers into either an "in-group" or an "out-group" (Dansereau, Graen & Hagen, 1975; Dinesch & Liden, 1986; Graen, Novak & Sommerkamp, 1982; Vecchio & Gobdel, 1984). Leaders tend to distinguish between in-group and out-group members very early in their relationship, and often on the basis of very little information (Phillips & Bedeian, 1994). This classification would therefore typically take place soon after the recruitment and selection of the employee. If the leader had beliefs or biases about the effectiveness of various recruitment sources, this could influence the leader's classification of the employee as well as the leader's expectations of the employee. LMX Theory suggests that leaders interact differently with members of the two groups. In-group members receive more time, information, and attention from the leader, greater resources, and more mentoring and support than do out-group members (Scandura & Schriesheim, 1994). Research has shown that in-group members have higher job performance, engage more in organizational citizenship behaviors, express higher levels of job satisfaction and are less likely to turnover compared to out-group members (Iles, Nahrgang & Morgeson, 2007 ; Chen, Lam & Zhong, 2007).

Method

A questionnaire was administered to 165 employees of a small manufacturing plant in the Southeastern United States. The average length of service of these employees, who worked in

SOBIE 2014

production and maintenance jobs, was 11 years. Their average age is 31 and 47% are female. Sixty-seven employees returned useable questionnaires for a response rate of 41%.

The questionnaire initially asked employees to indicate which recruiting method was used to recruit them into their job. Company management indicated that they used walk-ins/direct application, employee referral, a company job site web page, job posting, and general internet job sites (e.g., Monster.com) so these recruiting methods were listed on the questionnaire.

Short two to three item subscales were created to measure various aspects of differential treatment by supervisors based on Pygmalion Effect and Leader-Member Exchange Theories. Help from Supervisor was measured with three items: My supervisor checked on me regularly, My supervisor frequently asked if he/she could help me, and My supervisor made sure I had what I needed to get my job done. Coefficient Alpha reliability for this subscale was .78. Supervisor Performance Expectations was measured with two items: My supervisor expects me to perform well, and My supervisor made it clear he/she expects me to be a high performer (Coefficient Alpha = .77). Supervisor Praise/Recognition was measured with two items: My supervisor recognizes me for my good work, and My supervisor praises good job performance (Coefficient Alpha = .82). Feedback from Supervisor was measure with two items: I received a great deal of feedback on my performance from my supervisor, and My supervisor lets me know how well I am performing (Coefficient Alpha = .80). Clear and Difficult Goals was measured with two items: I have clear and specific work goals, and My work goals are quite difficult to accomplish (Coefficient Alpha = .66). Autonomy was measured with three items: I am free to do my job the way I think best, I have ample opportunity for independent thought and action, and I am able to make a lot of decisions on my own (Coefficient Alpha = .89). Intent to Turnover was included as an outcome variable to assess whether any of the recruiting methods produced applicants who were less likely to leave their jobs. Three items assessed Intend to Turnover: I will actively look for another job in the next year, I often think about quitting, and I will probably look for a new job next year (Coefficient Alpha = .87).

Results

Analysis of variance was used to test for differences on Intent to Turnover by recruiting method. A significant main effect ($F = 9.45$, $p = .00$) was observed for Intent to Turnover. Employees recruited via Walk-ins/Direct Application and Employee Referrals reported a significantly

SOBIE 2014

(Scheffe Post Hoc Test = .05) lower intent to turnover than employees hired via other recruiting methods.

Analysis of variance was used to test the Differential Treatment Hypothesis. Significant differences were observed for Supervisor Praise Recognition ($F = 2.60, p = .05$), and Supervisor Help ($F = 5.09, p = .001$) which are consistent with the Leader-Member Exchange theory. A significant difference was also observed for Supervisor Expectations ($F = 16.77, p = .00$) which is consistent with a Pygmalion Effect explanation. Supervisor Feedback approached significance ($F = 2.28, p = .07$). There were no significant differences for Autonomy or Goal Difficult/Specificity.

Scheffe Post Hoc tests ($p = .05$) were used to more fully explore the significant differences by recruiting method. The Scheffe test did not detect any significant difference between recruiting methods for Supervisor Praise/Recognition. Employees recruited via employee referrals reported significantly higher levels of supervisor help than employees recruited via an internet job search (e.g., Monster.com). Other recruiting methods were not significantly different from employee referral in terms of Supervisor Help. Employees recruited via employee referral and walk-in/direct application reported significantly higher Supervisor Expectations than employees recruited via other methods.

Discussion

This exploratory study provides some support for the Differential Treatment Hypothesis for explaining the relative effectiveness of different recruiting methods. At a small manufacturing company, employee referrals and walk-ins/direct application produced employees who reported lower levels of Intent to Turnover. This is consistent with previous research on the relative effectiveness of recruiting methods. Informal recruiting methods, primarily employee referrals and walk-ins/direct applications, have consistently been found to be more effective than other recruiting methods in terms of intentional to turnover, turnover, absenteeism, job performance, and employee attitudes. Research to date has examined primarily two explanations for the differential effectiveness of recruiting methods: the Realistic Information Hypothesis and the Individual Difference Hypothesis. The current study provides some initial support for a third explanation, the Differential Treatment Hypothesis.

Consistent with the Pygmalion Effect Theory, employees recruited via employee referral and walk-in/direct application reported higher Supervisor Expectations of performance than employees who were recruited via other methods. Consistent with the Leader-Member Exchange Theory, employees recruited via employee referrals reported higher levels of Help from Supervisor than employees recruited via other methods.

This differential treatment by supervisors may stem from the corporate culture. If a company has had more success with applicants from a particular recruiting method in the past, a common belief may develop concerning the relative effectiveness of that recruiting source. That belief that a particular recruiting method produces better employees may then translate into supervisor behavior resulting in different expectations and/or classification into an “in-group.” Leader-Member Exchange Theory research has produced evidence that employees classified to an in-group receive preferential treatment by their supervisor.

One limitation of the current study is the relatively small sample size. The sample may not have been large enough to detect some differences (e.g., Supervisor Feedback). A second limitation is the relatively short subscales employed in the questionnaire. More complete measures may be able to detect additional differences between recruiting methods.

The current study does provide some initial evidence for the Differential Treatment Hypothesis. Future research on explanations for the differential effectiveness of recruiting methods should include this hypothesis along with the Individual Difference Hypothesis and the Realistic Information Hypothesis.

References

Barber, A.E. (1998) *Recruiting employees: Individual and organizational perspectives*. Thousand Oaks, CA: Sage Publications.

SOBIE 2014

Billsberry, J. (2007) *Experiencing recruitment and selection*. Hoboken, NJ: John Wiley & Sons.

Blau, G. (1990) Exploring the mediating mechanisms affecting the relationship of recruitment source to employee performance. *Journal of Vocational Behavior*, 37: 303-320.

Breaugh, J.A. (1981) Relationships between recruiting sources and employee performance, absenteeism, and work attitudes. *Academy of Management Journal*, 24: 142-147.

Breaugh, J.A., T.H. Macan & D.M. Grambow (2008) Employee recruitment: Current knowledge and directions for future research. In G.P. Hodgkinson & J.K. Ford (Ed.s) *International Review of Industrial and Organizational Psychology*, vol. 23, pp. 45-82, New York: John Wiley & Sons.

Breaugh, J.H. & R.B. Mann (1984) Recruiting source effects: A test of two alternative explanations. *Journal of Occupational Psychology*, 57: 261-267.

Bureau of National Affairs, (1988) Recruiting and selection processes. Personnel Policies Forum, Survey Number 146 (May), Washington, DC.

Chen, Z., Lam, W., & Zhong, J. (2007). Leader-member exchange and member performance: A new look at individual-level negative feedback-seeking behavior and team-level empowerment culture. *Journal of Applied Psychology*, 92(1), 202- 212.

Dansereau, F., Graen, G. & Haga, W. (1975) A vertical dyad linkage approach to leadership within formal organizations. *Organizational Behavior and Human Performance*, 13, 46-78.

Dienesch, R. & Liden, R. (1986) Leader-member exchange model of leadership: A critique and further development. *Academy of Management Journal*, 11, 618-634.

Eden, D. (1992) Leadership and expectations: Pygmalion effects and other self-fulfilling prophecies in organizations. *Leadership Quarterly*, 3(4), 271-305.

Graen, G., Novak, M. & Sommerkamp, P. (1982) The effects of leader-member exchange and job design on productivity and job satisfaction: Testing a dual attachment model. *Organizational Behavior and Human Performance*, 30, 109-131.

Griffeth, R.W., P.W. Hom, L.S. Fink, & D.J. Cohen (1997) Comparative tests of multivariate models of recruiting source effects. *Journal of Management*, 23: 19-36.

Ilies, R., Nahrgang, J. D., & Morgeson, F. P. (2007). Leader-member exchange and citizenship behaviors: A meta-analysis. *Journal of Applied Psychology*, 92(1), 269-277.

Kalleberg, A.L., D. Knoke, P.V. Marsden & J.L. Spaeth (1996) *Organizations in America*. Thousand Oaks, CA: Sage Publications.

Kirnan, J.P., J.A. Farley & K.F. Geisinger (1989) The relationship between recruiting source, applicant quality, and hire performance: An analysis by sex, ethnicity, and age. *Personnel Psychology*, 42: 293-308.

Phillips, A.S. & Bedeian, A.G. (1994) Leader-follower exchange quality: The role of personal and interpersonal attributes. *Academy of Management Journal*, 37, 990-1001.

Rynes, S.L., R.D. Bretz & B. Gerhart (1991) The importance of recruitment in job choice: A different way of looking. *Personnel Psychology*, 44: 487-521.

Saks, A.M. (2005) The impracticality of recruitment research. In A. Evers, N. Anderson and O. Voskuijl (eds.) *Handbook of personnel selection*, Pp. 47-72, Malden, MA: Blackwell.

Scandura, T.A. & Schriesheim, C.A. (1994) Leader-member exchange and supervisor career mentoring as complementary constructs in leadership research. *Academy of Management Journal*, 37 1588-1602.

Schwab, D.P. (1982) Recruiting and organizational participation. In K. Rowland and G. Ferris (Eds.) *Personnel Management*, 103-128: Boston: Allyn & Bacon.

Taylor, M.S. & D.W. Schmidt (1983) A process-oriented investigation of recruitment source effectiveness. *Personnel Psychology*, 36: 343-354.

Vecchio, R.P. (1995) The impact of referral sources on employee attitudes: Evidence from a national sample. *Journal of Management*, 21: 953-965.

Werbel, J.D. & J. Landau (1996) The effectiveness of different recruitment sources: A mediating variable analysis. *Journal of Applied Social Psychology*, 26: 1337-1350.

Williams, C.R., C.E. Labig, & T.H. Stone ((1993) Recruitment sources and post hire outcomes for job applicants and new hires: A test of two hypotheses. *Journal of Applied Psychology*, 42: 163-172.

Zitoli, M.A. & J.P. Wanous (2000) Recruitment source research: Current status and future directions. *Human Resource Management Review*. 10: 353-383.

A Study of Small Business Information Security in Rural America

Donald A. Heier, Dakota State University
Guy W. Garrett, Gulf Coast State College

Abstract

This paper discusses a proposed research methodology in determining the information security posture of small businesses and the constraints that may limit their information security practices. A qualitative case study methodology is proposed that includes a quantitative survey and selection criteria for the study's participants.

Introduction

Concern for small business security in the increasingly technology dependent business environment is widespread, and this concern is reflected in research by the technology industry and various research communities (Mellado & Rosado, 2012). The work in this field primarily falls into two categories. The first defines best practices in information security geared to protecting the small business' assets. The second category generally looks for ways to measure the security practices that exist in small business and focus attention towards the weaknesses and vulnerabilities (Morgan, 2005). There are small business security surveys completed on an annual basis that paint a very poor picture of small business security practices, and these survey results are often the cause for sensational headlines (Kavilanz, 2012). Occasionally these surveys will attempt to suggest remedies that usually note the need for increased staffing or funding – these remedies don't fit well with small information technology budgets (Willcocks, 1992).

In the United States, the Small Business Administration (2012) will, on average, define a small business as having less than 500 employees. These businesses, however, represent over 95% of all businesses and employ over half of non-governmental employees (U.S. Small Business Administration, 2012). Small businesses have increasingly become targets for hackers and cyber criminals as larger businesses with more resources have become more secure (Kissel, 2009). The National Cyber Security Alliance reported that in 2012 that 31% of security attacks were on small businesses, an increase from 18% in 2011 (National Cyber Security Alliance, 2012). Small businesses typically have their entire technology infrastructure supported by a single employee or small department that is not well informed of security standards (Park et al., 2008).

One of the frequently reported security surveys for small business is the National Cyber Security Alliance (NCSA) / Symantec - National Small Business Study (2012). The most recent survey in 2012 consisted of 86 questions with a sample size of 1,015 small businesses, with 250 employees or less (National Cyber Security Alliance, 2012).

This research methodology seeks to investigate small business security practices by a descriptive case study. To better understand the security practices of these businesses, this study incorporates the use

SOBIE 2014

of the National Institute of Standards document titled “Small Business Information Security: The Fundamentals” (NISTIR 7621). This document is an interagency report that describes research of a technical nature with the intent of providing guidance to small businesses in their security actions (National Institute of Standards and Technology, 2013). Small businesses are not required to follow any of the guidelines, but are strongly encouraged to in order to meet a basic level of information security (Kissel, 2009). NISTIR 7621 describes 10 absolutely necessary security actions that a small business should utilize.

The research questions for the study are:

- 1) What level of security do small businesses implement when measured against the suggested practices of the NISTIR 7621 guidelines?
- 2) How do small businesses perceive they could improve their security practices in regards to NISTIR 7621?

Literature Review

A literature review was conducted to better understand the current situation and research in regards to small businesses information security in the United States. As noted in the introduction, small businesses are increasingly becoming targets for hackers and cyber criminals. (Kissel, 2009). In performing this search care was taken to keep the focus on small businesses with an eye towards their unique security concerns as well as their security practices.

The search began with various Internet searches as well as Google Scholar and then moved on towards the ProQuest and ACM libraries. The Internet search was a bit overwhelming, but by focusing on more current research and articles that better matched the research goals the search was narrowed considerably. The papers and articles selected for further review needed to either have a strong focus of assessing the current state of the small business security situation or suggest concise and effective strategies for improving small businesses security. The search also tended to follow more of a business mindset that focused on the resource limitations and concerns of a business and less on the technical details of information systems since the study focuses on business limitations and not limitations in technology..

As the search evolved, it was generally found that the articles in the scholarly journals focused on the management aspects of security such as business resources and security strategies. Industry documents, however, were ripe with data on current small business security surveys and often suggested best practices to improve security. It seemed sensible to separate the literature review into three themes: security surveys, best practices, and security strategy and management.

Research Methodology

This study of small business security will be based on case study research. Benbasat (1987) notes three reasons supporting case study research in information systems. Firstly, we can study these information systems in natural settings and then generate theories. Secondly, the researcher can seek answers to questions of how and why regarding information systems processes. Thirdly, he suggests a

SOBIE 2014

case is appropriate when few studies are available as the field of study is rapidly changing. Gable (1994) notes that case studies are not always completely qualitative and may include a quantitative survey and encourages IS researchers to combine methods as “far as is feasible”. In this particular study, it is hoped that the initial survey will serve to develop an understanding of the case’s security situation and likely lead to more in depth answers to the interview questions.

Components of research design as suggested by Yin (2003) will be utilized in this design. These components are:

- 1) A study’s question
- 2) Its propositions, if any
- 3) Its units of analysis
- 4) The logic linking the data to the propositions
- 5) The criteria for interpreting the findings

A study’s question. Yin (2003) suggests to clarify the study questions for the appropriate how and why questions. For this study, with our survey forming the basis for understanding the business security implementation and answering the first research question, the interview questions are noted as follows:

- 1) What resources do you feel would be needed to meet all the ‘absolutely necessary’ security actions?
- 2) What type of training or guidance would you like to see to help your company better understand computer security concepts?
- 3) Do you feel that there are specific limitations that effect incorporating security practices in your business?

Its propositions, if any. Yin (2003) suggest that propositions direct attention to items that need to be examined further and states that forming propositions will help the research move in the right direction.

Its units of analysis. Yin (2003) indicates that the unit of analysis is related to the way the initial research questions were defined. In this study, the research may select a certain geographic area and specific types of business that will be points of analysis with the unit of analysis representing the collection of these cases.

The logic linking the data to the propositions. The propositions have been developed in a previous step. The interview questions will be measured against the survey questions to determine whether the propositions have been met for each small business. The propositions do suggest that in general, small businesses will fall short of meeting the NISTIR 7621 security actions.

The criteria for interpreting the findings. For the survey questions, an overall rating indicating the level to which the small business meets the absolutely necessary security actions outlined in NISTIR 7621 will be calculated. This calculation will help to interpret the responses from the interview questions.

SOBIE 2014

The data collected for each small business included in this study will be:

Quantitative data to be collected

A survey will be constructed to collect the data as outlined below:

- Basic Business Information
- Total Employees
- Total IT Staff
- Number of hours each month devoted to IT work
- Average hours per month of outsourced IT services
- Questions Based on NISTIR 7621 absolutely necessary actions
 - Protect information/systems/networks from damage by viruses, spyware, and other malicious code.
 - Provide security for your Internet.
 - Install and activate software firewalls on all your business systems.
 - Patch your operating systems and applications.
 - Make backup copies of important business data/information.
 - Control physical access to your computers and network components.
 - Secure your wireless access point and networks
 - Train your employees in basic security principles.
 - Require individual user accounts for each employee on business computers and for business applications.
 - Limit employee access to data and information, and limit authority to install software.

Qualitative data to be collected

As a follow up to a completed survey, an interview will be conducted with the individual who completed the survey. The first part of the interview will be to discuss each question of the completed survey to determine the individuals understanding of the survey question and accuracy of the response. The second part of the interview will be interview questions as follows:

- 1) What resources do you feel would be needed to meet all the ‘absolutely necessary’ security actions?
- 2) What type of training or guidance would you like to see to help your company better understand computer security concepts?
- 3) Do you feel that there are specific limitations that effect incorporating security practices in your business?

The responses to the initial questions will determine follow up questions.

Contributions and Discussion

SOBIE 2014

One can envision numerous contributions from this research. Results from the survey should provide some insight into the validity of and usefulness of the NISTIR 7621 as a measurement tool for small business security. Insights learned could be used to modify or suggest changes to the absolutely necessary actions that are suggested. The survey results will also be valuable to develop theories based on the relationships that may exist between question items and could form the basis for theoretical models of small business security practices. The repeated survey during the interview will reduce limitations of the standalone survey and produce more accurate responses.

The qualitative data will be very beneficial in understanding how the small businesses view these security practices and how they might envision their options for improving their security practices. Results from the second interview questions will be helpful in developing methods and strategies that can be shared with small businesses to improve their technical knowledge and application of security concepts. The third interview question will give an indication of the limitations that small business feel limit their security implementation.

Future Research Plan

Future research may involve contributing to the development of practical small business security standards that may improve upon or extend beyond the absolutely necessary standards. This study can also serve as a baseline for developing security training and awareness programs geared towards businesses with limited staffing and financial resources. It is expected that future research from the findings of this case study will follow some of the generalizations suggested by Walsham (1995). These generalizations consist of development of concepts, generation of theory, drawing of specific implications, and contribution of rich insight.

References

- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369-369.
- Gable, G. G. (1994). Integrating case study and survey research methods: An example in information systems. *European Journal of Information Systems*, 3(2), 112-112.
- Internet Security Alliance. (2004). Commonsense Guide to Cyber Security for Small Businesses. Retrieved November, 2012, from <http://www.uschamber.com/reports/commonsense-guide-cyber-security-small-businesses>
- Kavilanz, P. (2012). Cybercrime's Easiest Prey: Small Business. Retrieved from CNN Money website: <http://money.cnn.com/2013/04/22/smallbusiness/small-business-cybercrime/index.html>
- Kissel, R. (2009). *Small business information security [electronic resource] : the fundamentals (draft) / Richard Kissel*. Gaithersburg, MD :: U.S. Dept. of Commerce, National Institute of Standards and Technology.
- Mellado, D., & Rosado, D. (2012). An Overview of Current Information Systems Security Challenges and Innovations. *Journal of Universal Computer Science*, 18(12), 1598-1607.
- Morgan, R. (2005). Information Security for Small Businesses. http://www.infosecwriters.com/text_resources/pdf/Information_Security_for_Small_Businesses.pdf
- National Cyber Security Alliance. (2012). 2012 NCSA / Symantec National Small Business Study. Retrieved February, 2013, from <http://www.staysafeonline.org/stay-safe-online/resources/>

SOBIE 2014

- National Institute of Standards and Technology. (2013). NIST Interagency Reports. 2013(March). <http://csrc.nist.gov/publications/PubsNISTIRs.html>
- NIST Computer Security Division. (2012). Small Business Corner. Retrieved November, 2012, from <http://csrc.nist.gov/groups/SMA/sbc/index.html>
- Park, J.-Y., Robles, J., Hong, C.-H., Kim, T.-h., & Yeo, S.-S. (2008). IT Security Strategies for SME's. *International Journal of Software Engineering and Its Applications (IJSEIA)*, 2(3), 91-98.
- The Hartford. (2012). Small Business Owners - Despite Being Increasingly Targeted - Believe Data Breach Unlikely. Retrieved from The Hartford website: <http://newsroom.thehartford.com/News-Releases/Small-Business-Owners-mdash-Despite-Being-Increasingly-Targeted-mdash-Believe-Data-Breach-Unlikely-50c.aspx>
- U.S. Small Business Administration. (2012). Small Business Size Standards. Retrieved March, 2013, from <http://www.sba.gov/content/small-business-size-standards>
- Walsham, G. (1995). Interpretive case studies in IS research: nature and method. *European Journal of information systems*, 4, 74-81.
- Willcocks, L. (1992). Evaluating Information Technology investments: research findings and reappraisal. *Information Systems Journal*, 2(4), 243-268. doi: 10.1111/j.1365-2575.1992.tb00081.x
- Yin, R. K. (2003). *Case study research : design and methods* (3rd ed.). Thousand Oaks, Calif.: Sage Publications.

Evaluating Results of a Small Business Security Survey

SOBIE 2014

Donald A. Heier, Dakota State University
Guy W. Garrett, Gulf Coast State College

Abstract

This paper provides a summary of small business responses to a survey based on the National Institute of Standards and Technology document “Small Business Information Security: The Fundamentals” (NISTIR 7621). The NIST document served as the guide for determining what information security practices small businesses should be utilizing. Participants completed a survey based on the ten absolutely necessary security actions recommended by NISTIR 7621 followed by a discussion of their responses in an interview format. Results on the level of implementation of security practices as well as the participants concerns regarding the practices are reported.

Introduction to the Problem

Concern for small business security in the increasingly technology dependent business environment is widespread, and this concern is reflected in research conducted by the technology industry and various research communities (Mellado & Rosado, 2012). In the United States, the Small Business Administration (2012) will, on average, define a small business as having less than 500 employees. These businesses, however, represent over 95% of all businesses and employ over half of non-governmental employees (U.S. Small Business Administration, 2012). Small businesses have increasingly become targets for hackers and cyber criminals as larger businesses with more resources have become more secure (Kissel, 2009). The National Cyber Security Alliance reported that in 2012 that 31% of security attacks were on small businesses, an increase from 18% in 2011 (2012). Small businesses typically have their entire technology infrastructure supported by a single employee or small department that is not well informed of security standards (Park, Robles, Hong, Kim, & Yeo, 2008).

Purpose of the Study

This purpose of this study was to investigate small business security practices using the a descriptive case study method. The subjects were independent insurance agencies located in seven rural North Dakota counties. Independent insurance agencies are companies that sell a variety of insurance products including areas of health, life, disability, property and long term care (Independent Insurance Agents and Brokers of America, 2012). In the United States there are approximately 37,500 independent agencies (Independent Insurance Agents and Brokers of America, 2012). These enterprises process and store significant amounts of personal data related to their customers. They also fulfill the definition of a small business and operate in relatively

rural locations. It can be assumed that their customers expect data security in the same way they would treat a larger organization. By determining how these businesses apply the 10 NIST practices, should provide better understanding of how small firms address basic security needs for their information systems.

The geographic area of this study includes the contiguous counties of Dickey, Lamoure, Logan, McIntosh, Ransom, Sargent and Emmons in South Central North Dakota. These counties represent a land area of approximately 7,576 square miles which is about 11% of the state of North Dakota. Additional criteria for case selection is that the independent agencies selected shall be responsible for managing their computer systems and not fall under the management of a related business such as a bank or credit union that may manage their computer systems for them.

To better understand the security practices of these businesses, this study incorporated the use of the National Institute of Standards document titled “Small Business Information Security: The Fundamentals” (NISTIR 7621). This document is an interagency report that describes research of a technical nature with the intent of providing guidance to small businesses in their security actions (National Institute of Standards and Technology, 2013). Small businesses are not required to follow any of the guidelines, but are strongly encouraged to in order to meet a basic level of information security (Kissel, 2009). NISTIR 7621 describes 10 necessary security actions that a small business should utilize.

Research Questions

The research questions were:

- 1) What level of security do small businesses implement when measured against the suggested practices of the NISTIR 7621 guidelines?
- 2) How do small businesses perceive they could improve their security practices in regards to NISTIR 7621?

Research Methodology

This analysis of small business security was based on case study research. Benbasat (1987) notes three reasons supporting case study research in information systems. First, we can study these information systems in natural settings and then generate theories. Second, the researcher can seek answers to questions of how and why regarding information systems processes. Third, he suggests a case is appropriate when few studies are available as the field of study is rapidly changing. Gable (1994) notes that case studies are not always completely qualitative and may include a quantitative survey and encourages IS researchers to combine methods as “far as is feasible”. In this particular study, it was hoped that the initial survey would serve to develop an understanding of the case’s security situation and likely lead to more in depth answers to the interview questions. The data collected for each small business included in this study was:

SOBIE 2014

Quantitative data collected

A survey was constructed to collect the data as outlined below:

- Business Name
- Contact Name and Position
- Phone Number
- Location of Business (Zip Code)
- Total Employees
- Total IT Staff
- Number of hours each month devoted to IT work
- Average hours per month of outsourced IT services
- Questions based on NISTIR 7621 absolutely necessary actions:
 - Protect information/systems/networks from damage by viruses, spyware, and other malicious code.
 - Provide security for your Internet.
 - Install and activate software firewalls on all your business systems.
 - Patch your operating systems and applications.
 - Make backup copies of important business data/information.
 - Control physical access to your computers and network components.
 - Secure your wireless access point and networks
 - Train your employees in basic security principles.
 - Require individual user accounts for each employee on business computers and for business applications.
 - Limit employee access to data and information, and limit authority to install software.

Qualitative data collected

As a follow up to a completed survey, an interview was conducted with the individual who completed the survey. The first part of the interview discussed each question of the completed survey to determine the individuals understanding of the survey question with a goal to produce an accurate response and a successful survey (Fowler, 1990). Differences in the results from the two surveys can provide a measure of the consistency and understanding of the survey instrument (Fowler, 1995). Since the interview based survey often involved a more thorough discussion of the security practices and discussion with the participant on their level of implementation, it should present a more accurate assessment (Collins, 2001). The second part of the interview involved interview questions focused on the second research question.

SOBIE 2014

Results and Findings

In the selected seven county areas, nineteen small businesses participated in the study which represents a 100% participation rate of independent insurance agencies in these counties. Table 1 below shows an overview of the 19 participants in regards to the total number of employees, full time IT staff, approximate number of hours per month devoted to IT work and the approximate number of hours per month of hired outside IT support. Due to the small size of these businesses, none of them were able to support a full time IT staff person and spent a very modest amount of time per month on IT related work.

Table 1: Participant Overview

Participant #	Number of Employees	Full Time IT Staff	Hours IT Work per Month	Hours Outside IT Service per Month
1	7	0	10	3
2	2	0	5	3
3	3	0	5	0
4	1	0	2	1
5	3	0	2	0
6	3	0	5	0
7	1	0	5	0
8	2	0	10	5
9	1	0	5	1
10	3	0	5	3
11	4	0	2	1
12	1	0	2	0
13	3	0	8	2
14	2	0	4	0
15	2	0	1	1
16	3	0	1	1
17	2	0	0	0
18	3	0	4	3
19	2	0	2	2
Average	2.53	0.00	4.11	1.37

The participants varied from a business size of just one insurance agent to maximum size of 7 employees with an average size of approximately 2.5 employees per business. The demographic data shows that the employees in the small business who's primary role is to sell various lines of insurance have also taken on the full responsibility of maintaining a certain level of information security for the business.

SOBIE 2014

Results and Findings: Security Practices Survey

After introducing the research project to them, each participant in the study was asked to complete a survey. The first part of the survey was designed to obtain some basic information about the business. The second part of the survey was designed to measure the level of implementation of ten security practices noted as “absolutely necessary” in NISTIR 7621. After the participant completed the survey, the ten security practices were revisited in an interview format as an attempt to verify the accuracy of the responses.

For each of the ten security practices, the participant was presented with a description of the security practice and then asked to rate the level of implementation in their business. Table 2 describes the response choices and the description of those choices.

Table 2: Definition of Survey Response Options

Survey Response Choice	Description
Fully Implemented	If your business completely implements a security practice as described, select Fully Implemented.
Mostly Implemented	If your business implements at least 50% of the practice, select Mostly Implemented.
Partly Implemented	If your business implements some of the practice, but less than 50%, select Partly Implemented.
Not Implemented	If the practice is not implemented at your business, select Not Implemented.
Not Sure	If you are uncertain about how your business implements a security practice, feel free to select ' Not Sure' as your answer.

Table 3 provides a high level overview of interview phase and the responses to the ten security practices and the percentage of the nineteen participants selecting that response.

SOBIE 2014

Table 3: Overview of Interview Based Survey Responses

	Fully Implemented	Mostly Implemented	Partly Implemented	Not Implemented	Not Sure
Practice 1: Anti-Virus	74%	26%	0%	0%	0%
Practice 2: Hardware Firewall	11%	74%	16%	0%	0%
Practice 3: Software Firewall	21%	58%	16%	5%	0%
Practice 4: Patches and Updates	5%	63%	26%	0%	5%
Practice 5: Backups	16%	26%	58%	0%	0%
Practice 6: Physical Access Controls	37%	42%	11%	11%	0%
Practice 7: Wireless Security	47%	16%	21%	11%	5%
Practice 8: Security Training	5%	21%	47%	26%	0%
Practice 9: Password Policy	26%	21%	42%	11%	0%
Practice 10: Limited Access	0%	42%	32%	26%	0%
Average	24%	39%	27%	9%	1%

The overall averages are also presented for the interview portion of the survey as represented in Figure 1.

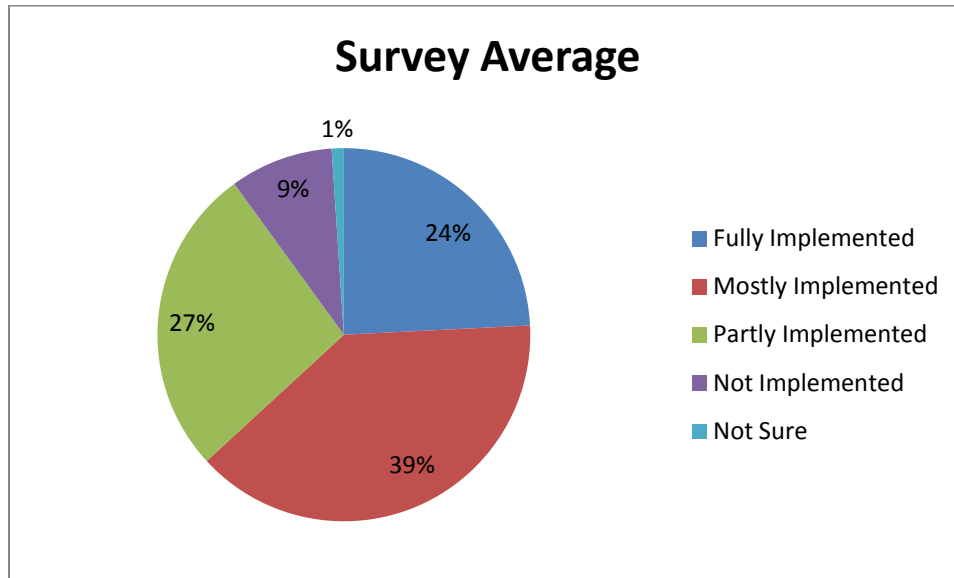


Figure 1: Average Survey Question Responses

The first goal of this study was to explore the security practices of various cases. Research question 1 set out to determine a level of implementation when measured against the practices as outline in NISTIR 7621. The interview survey results as displayed in table 3 indicate that on average small businesses in this study are falling short of the requirements. On average only 24% have fully implemented a typical security practice as specified.

As one looks across all the practices and the respondent's level of 'fully implemented', the highest level of compliance was with the following practices:

- Practice 1: Anti-Virus
- Practice 2: Wireless Security
- Practice 6: Physical access controls

The lowest level of compliance was with the following practices:

- Practice 10: Limited Access
- Practice 8: Security Training
- Practice 4: Patches and updates

Results and Findings: Participant Interviews

Question 1 of the interview asked the participants to identify what resources they felt would be needed to meet all the 'absolutely necessary' security actions. Table 4 below provides an overview of common themes that were coded and a count of responses.

SOBIE 2014

Table 4: Interview Question 1 Common Themes

Interview Question 1 Common Themes		
Count	Theme	Observations
4	None	Respondents answered none when they generally felt they were doing a good job with their security practices. Some initially said none, but then went on to actually specific some resources.
2	Outside Support	These respondents felt their only solution was to bring in outside support for assistance.
7	Training	Respondents suggested they had a lack of knowledge in information security practices and indicated that getting more training or hiring staff that already had security knowledge would help improve their practices.
7	Time	Respondents indicated that with their busy schedule they just don't have any time to devote to improving their security practices.
4	Interest in Technology	Respondents indicated they lack an interest in the subject and it's not something they think about on a regular basis.

Question 2 of the interview asked the participant to identify the type of training or guidance they would like to see to help their company better understand computer security concepts. Table 5 below provides an overview of common themes and a count of responses.

Table 5: Interview Question 2 Common Themes

Interview Question 2 Common Themes		
Count	Theme	Observations
4	Not Interested	Respondents suggested that this is something they are not interested in putting time and effort towards.

SOBIE 2014

9	Seminars / Convention Topics	Respondents indicated that they would like to see training at seminars and conventions.
5	Local or Onsite Training	The respondents would like to see training offered in their local community or some onsite training.
2	Simplified Materials	These respondents indicated a need for simplified materials that present step by step solutions to security concerns.
2	Online training	Respondents suggested they would be open to industry specific web training.

Summary of Research Findings

This study introduced two research questions. The first research question was addressed by a ten question survey that was based on the ‘absolutely necessary’ security actions for small business that was presented in NISTIR 7621. Each question of the survey explained a security practice and asked the participant to rate their level of implementation for that practice. The results of the survey suggest that average small business in this study is falling short of meeting all ten ‘absolutely necessary’ security actions. The average small business fully implements 24% of the security practices.

To address the 2nd research question, interview questions were developed. Interview question 1 asked the participants to identify what resources they felt would be needed to meet all the ‘absolutely necessary’ security actions as noted on the NISTIR 7621 based survey. The responses were analyzed and coded to a list of 5 themes.

The first theme was time and the respondents typically indicated that their busy schedule did not allow any time to devote to improving their security practices. The second theme was training. The respondents suggested they had a lack of knowledge in information technology and security practices, and that their knowledge could be improved by acquiring more training or hiring staff that already had security knowledge. The third theme was interest and the respondents indicated they lack an interest in information security and it’s not something they think about on a regular basis. These respondents typically understood the security risks, but had the mindset of not feeling it was worth the effort to improve their security. The fourth theme was noted as none. The respondents who were meeting most of the security practices and felt they were doing a good job suggested that there was nothing more they needed to do. The final theme was outside support. These respondents felt the best solution was to look for outside

assistance. Based on the themes presented, it does appear the respondents do have some ideas of what it might take for their business to improve their security practices.

Question 2 of the interview asked the participant to identify the type of training or guidance they would like to see to help their company better understand computer security concepts. Nine respondents suggested seminars, five suggested local training, 2 suggested the need for simplified training materials, two recommended online training, and 4 were not interested in further training.

Recommendations for Future Research

The findings from this study are significant in that they provide good insight into the state of small business information security practices for the selected independent insurance agencies in rural North Dakota. This study also introduces a measurement tool based on the NISTIR 7621 guidelines for small business. There are however areas for future investigation and research. Two key areas are identified:

- 1) To complement this study, the analysis could expand into other business types, geographic areas, and seek out businesses that have either a larger number of employees or more variation in the number of employees. This would provide a wider understanding of small business security where the insight gained could be more applicable to other business scenarios.
- 2) Investigate more fully the NISTIR 7621 guidelines and whether the practices and guidelines suggested represent a truly accurate assessment of the necessary security actions for small businesses. Perhaps recommendations and modifications could be investigated that could improve the NISTIR 7621 document.

References

- Benbasat, I., Goldstein, D. K., & Mead, M. (1987). The Case Research Strategy in Studies of Information Systems. *MIS Quarterly*, 11(3), 369-369. Clancy, H. (2011). 5 reasons cybersecurity matters to small businesses. Retrieved April 1, 2013, from <http://www.zdnet.com/blog/small-business-matters/5-reasons-cybersecurity-matters-to-small-businesses/1008>
- Collins, D. (2003). Pretesting survey instruments: An overview of cognitive methods. *Quality of Life Research*, 12(3), 229-238. doi: 10.1023/A:1023254226592
- Fowler, F., & Mangione, T. (1990). *Standardized Survey Interviewing: Minimizing Interviewer Related Error* Social Research Methods Series: 18. Newbury Park: Sage.
- Gable, G. G. (1994). Integrating case study and survey research methods: An example in information systems. *European Journal of Information Systems*, 3(2), 112-112.
- Independent Insurance Agents and Brokers of America. (2012). *Agency Universe Study*. Retrieved June 2013, from <http://www.independentagent.com/Resources/Research/AgencyUniverseStudy/agency-universe.aspx>

SOBIE 2014

- Kissel, R. (2009). Small business information security [electronic resource] : the fundamentals (draft) / Richard Kissel. Gaithersburg, MD :: U.S. Dept. of Commerce, National Institute of Standards and Technology.
- Mellado, D., & Rosado, D. (2012). An Overview of Current Information Systems Security Challenges and Innovations. *Journal of Universal Computer Science*, 18(12), 1598-1607. National Institute of Standards and Technology. (2013). NIST Interagency Reports. 2013(March). <http://csrc.nist.gov/publications/PubsNISTIRs.html>
- NCSA. 2012. "National Security Alliance Small Business Study 2012" (available online at <http://www.staysafeonline.org>; accessed on November 12, 2013).
- NIST Computer Security Division. (2012). Small Business Corner. Retrieved November, 2012, from <http://csrc.nist.gov/groups/SMA/sbc/index.html>
- Park, J.-Y., Robles, J., Hong, C.-H., Kim, T.-h., & Yeo, S.-S. (2008). IT Security Strategies for SME's. *International Journal of Software Engineering and Its Applications (IJSEIA)*, 2(3), 91-98.
- U.S. Small Business Administration. (2012). Small Business Size Standards. Retrieved March, 2013, from <http://www.sba.gov/content/small-business-size-standards>
- US Census Bureau. (2010). State & County QuickFacts. Retrieved from http://quickfacts.census.gov/qfd/maps/north_dakota_map.html.
- Willcocks, L. (1992). Evaluating Information Technology investments: research findings and reappraisal. *Information Systems Journal*, 2(4), 243-268. doi: 10.1111/j.1365-2575.1992.tb00081.x

IMPROVED WRITING SKILLS: THE ‘NEW NORMAL’ FOR ACCOUNTING STUDENTS

Elizabeth A. Hewey

University of West Florida

ABSTRACT

What do university students think of their writing skills? The short answer is that they think they are good writers. The long answer addresses why students think that they are good writers when so much scholarly research proves otherwise. “Improved writing skills: the ‘New Normal’ for Accounting Students,” based on the findings of secondary research sources and primary analysis in the University of West Florida Writing for Business: Theory & Practice class explores this alarming antithesis with special emphasis on the accountancy profession. The in-depth research first establishes significant need for improved writing skills in business overall, and in accounting specifically, with definitive recognition of the issues from accounting firms to the United States Security and Exchange Commission (SEC).

The paper then reviews student communication skills from a historical and national perspective, linking pioneers in the accounting industry. This study includes teaching ideas and techniques that have been used successfully to improve students’ reading comprehension, critical thinking, and oral and written communication skills. Moving from general to specific, the examination of students’ writing skills presents what is being accomplished in the university’s business writing class and writing labs. The conclusion of this paper is that stakeholders need to champion a collective paradigm shift to improve student cognitive and writing skills with emphasis on the financial governance field of accountancy.

INTRODUCTION: ENSURING GROWTH

In her descriptions of the complementary roles between writing and critical thinking skills, Palen claims that, “If the accountant’s practice is to grow, so must his (and her) ideas” (as cited in Flesher, Previts, and Sharp, 2009, p. 6). This report is designed to examine the value of writing skills in corporate and business governance with particular emphasis on the accountancy profession. Overall, the research writing further investigates and discovers recommended teaching practices for improving writing skills. Specifically, the study seeks answers to the following student-related questions:

- Is there a need for students to improve writing skills for a career in accountancy?

SOBIE 2014

- How do accounting professionals historically link writing skills with cognitive abilities?
- What do students think about the value of writing?
- How do students rate their own individual writing skills? Is there a correlation between a student's ratings and student's performance on writing skills?
- Do stakeholders, other than teachers, criticize students' writing skills?
- Does any class or program help students to improve their writing skills?
- What are proven teaching practices developed to improve students' cognitive skills?

Stakeholders and students alike, both retrospectively and prospectively, have a vested interest in economies. For this single-minded purpose, all should view the impetus of weakening writing skills as a deflationary economic catalyst, and they should act collectively to shift the paradigm.

DISCUSSION: ESTABLISH NEED FOR WRITING SKILLS

Bruzzese (2014), a nationally-syndicated millennial business columnist, writes that "Many businesses today have expressed frustration with younger workers. Owners claim that younger workers lack the proper business skills and other professional abilities that will make them good employees" (para.1-2). Bruzzese (2014) provides an optimistic guidepost explaining that "research on workers born after 1980, known as millennial or Generation Y, shows that they greatly desire career development, guidance from mentors and opportunities to expand their skills" (para. 9). A central issue in improving Generation Y's business skills appears to be learning location: home, school, church, university, workplace, society, or a combination thereof.

Writing for Accounting Clients: 'Survival Tactic'

Connecting generations of business professionals in her scholarly writing for *The CPA Journal*, Kranacher (2007) analogizes how writing is a survival tactic that can transcend time demonstrated by a well-known master of prose. Quoting George Bernard Shaw, "The problem with communication . . .," she states,

"... is the illusion that it has been accomplished." The emphasis is my own, and George Bernard Shaw didn't have the accounting profession specifically in mind when he wrote these words, but he might as well have. Employers say their major concern with today's accounting graduates is their level of professional literacy--or more to the point, their lack of adequate communication skills: reading, writing, listening, and speaking.

SOBIE 2014

Increased professional visibility combined with the public's heightened expectations of CPAs makes these traits essential for survival in the current business environment. But many of the profession's fundamentals as now taught leave little room for much-needed communication or critical thinking on the CPA's part. (p. 80)

Historically, the accounting profession has an image of primarily being mathematics-driven, a preconception that has caused students with so-called “left brain” communications skills to avoid the field, “but in reality, today's accountant needs to have equal parts financial, legal, investigative, and teaching skills” (Kranacher, 2007, p. 80). It is true that accountants need to keep abreast of technical knowledge; however, many are their clients’ trusted advisors when it comes to a myriad of financial decisions. Accountants are called on to research, translate, and communicate complex, multi-tiered concepts that are designed as an economic catalyst to strategically position their clients’ resources for growth and ensure the assets’ future viability.

Fortunately, teaching is a potent legacy of accountancy. Many corporations, small businesses, governments, and nonprofit organizations rely on the detailed accounting explanations provided and the critical thinking imparted to a wide variety of stakeholders for effective decision-making; however, “Enron, WorldCom, and other audit failures serve as prime examples of how incomprehensible communication can allow a company's problems to be hidden in plain sight” (Kranacher, 2007, p. 80). The Certified Public Accountant (CPA) summarizes her thoughts with “we are good at arithmetic, but we have miles to go when it comes to reading and writing. Our mandate as a profession is to learn how to communicate in a cogent, coherent, and comprehensive manner” (Kranacher, 2007, p. 80).

Business research demonstrates that employers have long complained about employees’ oral and written communication skills. One study, conducted in 1997, “found that employers of recent MBA graduates of such prestigious programs as the University of Chicago, the University of Pennsylvania's Wharton School, Harvard Business School and Columbia Business School would grade at least 70 percent of such graduates a ‘C’ or ‘D’ [overall]” (Reinstein, Weirich, & Nellermeoe, *Managerial Auditing Journal*, 1999, para. 3). When top graduates receive disappointing marks, the negative impact disillusiones the professional and financial community.

The SEC further considers writing skills such a critical component of accounting and financial standards that it enacted rule #33-7380 to denounce “dense writing styles, legal jargon, and repetitive disclosure” (Reinstein et al., 1999, para. 5). Referred to as *Plain English Writing*, the rule specifies six fundamental principles for clear investment writing: “(1) active voice; (2) short sentences; (3) everyday language; (4) tabular presentation of complex material; (5) no legal jargon; and (6) no multiple negatives” (as cited in Reinstein et al., 1999, para. 6).

SOBIE 2014

The SEC continues to receive objections, in particular from senior investors, to “arcane, complex, and incomprehensible language” (Reinstein et al., 1999, para. 8). Consequently, the country’s leading regulatory agency worries that the growing trend of fewer investors reading individual corporate prospectuses disguises underlying inflammations destined to periodically fester into epidemic proportions and doom the country into a continuous history of bubble-bursting economic cycles. Business leaders, employers, CPAs, and government agencies have long agreed that proficient writing skills are a fundamental catalyst for economic development; however, the more immediate question is what do students think of their writing skills?

Perceptions: Why Students Think They are Good Writers.

Simkin, Crews, and Groves (2012) indicate in “Student perceptions of their writing skills: Myth and reality” that many reasons exist why students often do not possess college-level writing skills: “This study investigates two of them: (1) students do not believe that good writing skills will be important to them in their careers, and (2) students perceive that they are already good writers (when in fact they are not)” (p. 81). According to Simkin et al. (2012), poor writing skills have been a chronic weakness of college students for 50 years. In addition, the authors list *The Dumbest Generation* among recent writings that provide “further evidence of the writing deficiencies of college level students” (as cited in Simkin et al., 2012, p. 82). Hence, they specify that not only has there been little improvement in comparative studies over several decades but also that the low writing scores have stabilized in the past 30 years, making the malady a chronic condition immune to rudimentary measures. Since a higher proportion of students enter post-secondary institutions today, a higher proportion of college and university students are poor writers perpetuating a disturbing deviant norm (Simkin et al., 2012).

As in most shared stakeholder conditions, responsibility for this antithesis is alluring and multi-faceted. The perennial pointer of blame for the plight is placed on parents, education, workplace, technology, society, and cultural and literary anemia depending on the perspective of the director and the audience. Student misconceptions can also offer a host of camouflaged explanations: “Wallace (2004) noted, for example, that the many errors in student résumés and cover letters reflect the attitude that good writing skills are not important in those jobs not directly requiring them” (as cited in Simkin et al., 2012, p. 83). In fact, a 2005 study of 1,100 students “supports the likelihood that students do not value good writing skills. . . apathy, grade inflation, and absenteeism all appear to contribute to a growing loss of student accountability and perhaps writing skills are among the casualties” (as cited in Simkin et al., 2012, p. 84).

SOBIE 2014

Research Study: 119 Business Majors Evaluate Writing Skills.

Simkin et al. (2012) gathered information from students in five separate, junior-level classes at a 15,000-student western university with 140 students completing the survey. Overall, the objective of the study was to discover how the students valued their writing skills and abilities. Survey questions asked students how important they thought their writing abilities would be in the future. Student responses refuted the first hypothesis presented by Simkin et al. (2012) that students do not value good writing skills: “105 students thought that their writing ability was likely to be very important to their careers, 35 thought it was going to be somewhat important, and no one thought it was going to be unimportant” (p. 85).

Interestingly, another outcome of the attitudinal questions was that 97%, or 136 students, felt that “their writing abilities were likely to affect the way others perceived their intelligence, knowledge, or other capabilities” (Simkin et al., 2012, p. 85). Now this outcome brings some peer pressure into the equation that has not been discussed previously. One consequential concept is that the members of the Y Generation appear closely associated with peers who can leverage behavioral changes; according to the former finding, peers already judge writing ability and assign status, thereby introducing a recognized value for peer-reviewed writing.

In the Simkin et al. (2012) survey, final questions asked students how they rated their individual writing ability with response selections provided: excellent, competent, good, or poor. The authors were not surprised when 135, or 96%, of the respondents rated themselves as average or above, “and only 5 students—less than 4% of our sample—rated themselves as ‘poor’ writers. Clearly, few of the students in our sample agreed with the general view that students lack good writing skills—at least when rating themselves” (Simkin et al., 2012, p. 85).

Another question asked was whether any university classes “had helped them improve their writing abilities” (Simkin et al., 2012, p. 86). Since most of the students were enrolled in a business writing class, the affirmative answer of 85%, or 119 students, provides promising prospects for the future. The next meaningful question, for this research paper’s purposes, asked the students about criticism of their writing skills by parties other than their teachers. A full 45% of the students indicated that only their teachers had ever criticized their writing, a key finding when investigating explanations as to why students believe they are good writers in the face of all the research that states otherwise (Simkin et al., 2012). The students were then given a grammar test to correlate the link between the students’ self-ratings and actual results.

SOBIE 2014

Simkin et al. (2012) “stated simply, no statistical evidence to support the claim for a relationship between the student ratings of their writing abilities and the scores on their grammar tests was found” (p. 87). The grammar test was followed up with a vocabulary test with the same results: “no relationship between the student self-ratings of their writing abilities and the scores on an independent test of such abilities. This finding supports the claim that most students are unaware of the deficiencies in their writing skills” (Simkin et al., 2012, p. 88). The findings culminate in a paradigm shift that students do value writing and do not know that they are poor writers leading to a level of awareness that can be addressed individually and collectively. Finally, the students were given a writing assignment and the results demonstrated “an 8% chance of a relationship between ‘writing ability’ and ‘self-rating.’ This finding again supports the claim that most students are unaware of the deficiencies in their writing skills” (Simkin et al., 2012, p. 89). The disparity between in-class tests and home writing assignments could point to increased collaboration or the idea that a few students can construct sentences.

Overall, findings conclude “that students are unaware of their own writing deficiencies, and their perceptions of their writing abilities were inflated” (Simkin et al., 2012, p. 91). This assumption sounds like a reasonable area where all of the stakeholders who are committed to improving student writing skills can find common ground. Identifying a common source can provide a group consensus pathway for improvement where the individual parties involved collectively participate to address the issue rather than carry the heavy burden of responsibility.

Definitive Tone: CPAs Do Have To Write.

Chiurri and Varaksina (2006), two accounting students at the University of Massachusetts, place a definitive tone on their article “End of the Myth: CPAs Do Have to Write,” by interviewing CPAs Michael Devlin of Grant Thornton and Paul Ferreira of Ercolini & Co. The CPAs describe the primary written documents with which most CPA firms are involved:

- Financial statements and other special reports, which include a firm's opinions;
- E-mail correspondence with clients and firm personnel;
- Work paper review comments for follow-up by managers and staff; and
- Various forms for tax authorities and clients. (Chiurri and Varaksina, 2006, p. 10)

Chiurri and Varaksina (2006) reiterate the “Plain English” rules of the SEC:

1. Active voice. According to experts such as Elizabeth Danziger, “verbs in the active voice leave a stronger impression on the reader and remove possible ambiguities” (as cited in

- Chiurri and Varaksina, p. 10). The SEC notes that the subject performing the action in active voice follows how we process information; whereas, “in passive voice, the action is performed by somebody or something that may be a disguised outside party” (Reinstein et al., 1999, p. 487). Strunk and White (1935/1979) declare in, *The Elements of Style*: “The habitual use of the active voice makes for forcible writing. This is true not only in narrative concerned principally with action but in writing of any kind” (p.18).
2. Short sentences that do not require the reader to do “extra work to find the real meaning” and “a maximum of 18 words per sentence” (Chiurri and Varaksina, 2006, p. 10). Strunk and White (1935/1979) add: “Vigorous writing is concise. A sentence should contain no unnecessary words, a paragraph no unnecessary sentences, for the same reason that a drawing should contain no unnecessary lines and a machine no unnecessary parts” (p.23). William Strunk, a professor at Cornell University now deceased, is reputed for omitting needless words, and his “little book” on writing rules is a testament to his succinct beliefs.
 3. Everyday language. Reinstein et al. (1999) state that “Clearer communications result when writers and readers use definite and concrete words. Similarly, providing examples helps make complex information more understandable” (p. 487). Strunk and White (1935/1979) illustrate “If those who have studied the art of writing are in accord on any one point, it is on this: the surest way to arouse and hold the attention of the reader is by being specific, definite, and concrete” (p.21).
 4. Tabular presentation of complex material. White space and organization allows readers to break down the information quickly without getting lost in the presentation of numbers. It is important that readers are able to follow the logic of the numerical order marked since many look for the natural flow to reasonable conclusions.
 5. No legal jargon. Accountants want clients to understand the meaning of financial and investment information, not to be confused by the meaning of the language. Clients are often wary of legalese until a path is cleared to reasonableness.
 6. No multiple negatives. Multiple negatives can create misunderstandings with clients. Avoiding the use of negatives clarifies the writing and states the action that the client needs to do positively: “We will send your money within one business day if you include your tax identification number in your withdrawal request” (Reinstein et al., 1999, p. 486).

CPAs Ferreira and Devlin offer an important overriding suggestion for accounting students striving to become better writers: “read on a daily basis, including not only professional literature, but also editorials; do proper research; and plan, edit, and proofread” (Chiurri & Varaksina, 2006, p. 11). Accounting students can hone their critical thinking and debate skills by dissecting editorials because of the varied political, economic, and financial views presented.

In summary, the authors concur that “the role of accountants has gone far beyond number-crunching. Accountants must be effective writers and communicators . . . using precise, clear language to make documents easy to comprehend, avoiding possible misunderstandings, embarrassment, or even litigation” (Chiurri & Varaksina, 2006, p. 11). As clearly demonstrated, there is a definite need for improved writing skills to provide the impetus necessary for accounting student’s personal and

SOBIE 2014

professional growth. Today, crunching away on numbers quietly in a hidden cubicle with little client contact is the role of a computer, not an accountant.

STUDENT WRITING SKILLS FROM A NATIONAL PERSPECTIVE

Flesher et al. (2009) portray Palen as the national heroine of accountancy: “Female accountants were few in the early years of the profession, but there were pioneering women CPAs, and Jennie May Palen was one of them” (p.6). CPA Palen was celebrated for her writing skills in crafting speeches and audit reports while publishing numerous collections. Her total published works are not known because she also worked as a ghostwriter. She commented on the common practice of her day: “It is a strange feeling to see every word, every comma that you have written appear under someone else’s name” (as cited in Flesher et al., 2009, p.6).

Historically, her advanced thoughts continue to breathe through her legacy contribution to J.K. Lasser’s *Standard Handbook for Accountants* published in 1956. Palen stressed the important relationship between accounting and writing for effective communications with words: “Caution demands precision—in thinking, in accumulation of data, in grammatical construction, and in the use of words. . . Clarity requires not only that a statement can be understood but that it cannot reasonably be mistaken” (as cited in Flesher et al., 2009, p. 6).

Nationally: Compliance and Complexity Drives Demand.

Firch, Campbell, Filling, and Lindsay (2011), *American Journal of Business Education*, nationally illustrate that “today’s financial reporting environment is heavily oriented toward compliance issues. Evaluating and documenting compliance involves text preparation and review rather than computation” (p. 15). The authors further discuss the extensive documentation and research that is required to “demonstrate compliance with complicated rules and guidelines which are promulgated in written form. Whether these rules and guidelines are available in paper volumes or via computerized databases, students are expected to research, understand, and write in this environment” (Firch et al., 2011, p.16). Growing demands in the marketplace have necessitated an emphasis on improving accounting students’ writing abilities.

Accompanying the idea of improving writing skills is the need for the measuring of outcomes. The authors suggest an assessment with an internal and external approach. The internal approach depends

SOBIE 2014

upon progress measurements in the writing skills course, advancement to the Masters level program, and CPA exam results. External measurements are more difficult to quantify; therefore, the authors recommend active area professional input. Both internal and external assessments, as defined by Firch et al. (2011), are continuously tracked in the University of West Florida College of Business to serve the needs of the professional community.

In a letter to the editor of *The CPA Journal*, Thompson (2010) writes “Clear, concise exposition of facts, methods, and conclusions is an ever-more-vital part of any CPA's skill set,”

(p. 15). Thompson describes the long history of writing being evaluated in the CPA exam with his experience in 1974. He further reflects that in the 1990s, when the CPA exam converted to computerized tests, there was discussion about removing written-response questions with an immediate outcry from practitioners, including his own, that resulted in the retention of the written-response questions (Thompson, 2010). He concludes his letter with a personal insight: “In a world where spin professionals seem bent on distorting any fact to fit their purpose, the plain truth of a clear train of thought from data and analysis through conclusion and explanation is the best means of persuading users of the value of our work” (Thompson, 2010, p.15).

Research Study: Accounting Majors' Perceptions of Future Career Skills

Parham, Noland, and Kelly (2012) outline their findings in “Accounting majors’ perceptions of future career skills: An exploratory analysis,” *American Journal of Business Education*. The study sample consisted of 205 students enrolled in Georgia Southern University:

Forty-six percent of the students in the sample were accounting majors. Seven percent of the respondents were finance or economics majors, four percent were information technology and information systems majors, and 15 percent were management, marketing, or logistics majors. (Parham et al., 2012, p.29)

The College of Business Administration at the university is accredited by the Association to Advance collegiate Schools of Business (AACSB) International.

This study presents the top nine skills that students “deem to be important for their future careers. Many of the skills accounting majors ranked as important for their future were not surprising” (Parham et al., 2012, p.29). What is a credible outcome is further verification of the Simkin et al. (2012) study on

“Student perceptions of their writing skills: Myth and reality” cited previously. The Accounting majors in this study also identified the importance of written and oral communication as well as giving high marks to the additional soft skill selections of “professional demeanor, motivation, decision making, interpersonal skills, analytical and critical thinking, leadership, and teamwork” (Parham et al., 2012, p.29).

TEACHING TACTICS FOR IMPROVING WRITING SKILLS

Reinstein and Trebby (1997) write that CPAs need to “elevate their critical thinking to grasp the meaning of increasingly complex concepts and principles, to judge and apply these concepts and principles to specific issues, and then to communicate the results effectively to others” (p. 105). The authors’ teaching objective is to correlate the intimacy between thinking skills and effective writing by assigning brief position papers. They emphasize brevity because “a paper should not seek to incorporate all that a writer knows about the subject; rather, the writer should focus on material that is relevant and specific to the readers’ needs” (Reinstein & Trebby, 1997, p. 106). In class, a classmate surmises that only one written page is necessary because time constraints take priority. My response is that the above exercises can aid students in developing a one-page presentation effectively required to present the principle in a coherent and cohesive manner. Clients and the firm’s partners may want to only see a brief presentation; however, they also expect assurance that the discovery process is thorough and complete.

Etter and Ross (2013) stress improving reading skills as a tactical pathway to improving writing skills: “Many college students are poor readers who are unfamiliar with a significant number of the issues, concepts, procedures, and technology used in the accounting profession” (p.595). They suggest that exposure to professional articles gives students the practice and experience in analysis and argumentation that professional accountants use. As an active learning exercise, they assign written article summaries from a reading list of professional journals and magazines that allow students to stay abreast of recent accounting developments while building comprehensive and critical thinking skills (Etter & Ross, 2013).

In addition, Irving (2011) drives the reading road into research by using a “pedagogical approach which fosters active learning” (p. 287). In his classes, students read and discuss excerpts from professional journals in relationship to accounting topics which are crafted to increase database research, critical thinking, and communication skills. Then students work in small teams, enhancing student learning through collaboration and development of cooperative learning skills, to support or disprove selected hypotheses with written research from supplementary materials. Irving indicates that “results from a survey created to assess this research experience reveal that 94 percent of respondents indicated

SOBIE 2014

this project substantially improved their level of knowledge, skills, and abilities related to accounting” (p. 287).

In the University of West Florida (UWF) business writing class, a librarian presents professional journal databases with navigational instructions. Oftentimes, students are in awe of the breadth of the peer-reviewed scholarly journals available. This experiential learning allows students to build perspective in their reading acumen by exposing them to multi-layered disciplines investigating common topics. Working in small groups encourages students to gain communication skills as well as fortify writing deficiencies. Relinquishing control is generally as difficult for many students as it is for many professionals.

Educators and students are fast realizing the benefits of building cognitive skills through small team work. Glenn, Goldwithe, and Connors (2008), in *The St. Martin's Guide to Teaching Writing*, task groups with even more responsibility, indicating that their “primary use lies in providing advice about revising and practice in editing” (p. 66). Authors also suggest using peer review from the standpoint of two student readers for each written piece. Multiple viewpoints allow student writers to experience varied perspectives; in addition, the student evaluators frequently find support for their comments within the group. As a follow-up, evaluators are encouraged to provide written responses that can be clipped to the written draft because they become more concrete tools for rewrite than discussion alone (Glenn et al., 2008).

The St. Martin's Guide to Teaching Writing provides standards and specific questions for students and educators to evaluate groups as well; whereas, many groups are evaluated at the end of project period, Glenn et al. (2008) suggest that “after one or two sessions of students working in their writing groups on their own, try asking for a brief, written evaluation of the group’s effectiveness” (p.69). Another tried and true tactic that the teaching dispatch offers is designed to encourage a more meaningful and structured peer-review experience; the authors provide a handy desktop guide with detailed student instructions for reviewing writing (Glenn et al., 2008).

(Please see Appendix: Figure I. *The St. Martin's Guide to Teaching Writing*, Glenn, Goldwithe, and Connors. Copyright 2008 by Bedford/St. Martins. Used with permission of the publisher.)

Micciche (2004), *Making a case for rhetorical grammar*, elevates the discussion of persuasive writing further by presenting grammar as a rhetorical tool: “The study of rhetorical grammar can

SOBIE 2014

demonstrate to students that language does purposeful, consequential work in the world—work that can be learned and applied” (p.716). She links teaching grammar as central to teaching thinking because developing sentences requires a conceptual ability to envision relationships between ideas which require identification with and reflection about the reader.

Pronoun use, active or passive verb constructions, and sentence patterns represent relations between writers and the world that envelops them. Word choice is an expression of the way that we position ourselves to others. How we put our ideas into words is a dynamic process with continuous contractions and expansions; therefore, rhetorical grammar instruction is foundational to articulating ideas (Micciche, 2004). She deftly illustrates “how a well-coordinated sentence can keep your reader breathlessly moving with you, how techniques that create rhythm and emphasis heighten the feeling being conveyed, and how subordination expresses relationships among ideas” (Micciche, 2004, p. 721).

Her teaching tactic is the book, where students copy passages from their favorite medium and follow each entry with a paragraph of analysis on grammar technique. Objectively, Micciche wants students to learn the strategic association between what is being said and how it is being said. Subjectively, she wants students to document and reflect on grammar at work in theirs and others’ writing (Micciche, 2004). Micciche’s twenty-two page essay is a composition of the symphonic and sensuous melodies of grammar where students can be inspired, like the Sistine Chapel, by an illustration of what is possible with grammar, not just what is probable.

Elbow (1975), another favorite writing author, takes an entirely different tact in his book, *Writing without Teachers*, by declaring: “Freewriting may seem crazy but actually it makes simple sense” (p.4). It is a concept of non-editing: “Make some words, whatever they are, and reel in as hard as you can. Afterwards you can throw away lousy beginnings and make new ones. This is the quickest way to get into good writing” (p. 6). Elbow (1975) pursues ten-minute writing sessions as his contribution to classroom exchange. He encourages students to freewrite about the topic of their choice. He surmises that students will produce much more poor writing than good, but the rare good pieces will be their best writing. Elbow adds that freewriting is very productive when trying to find subjects to write about: “Afterward look to see what words or passages seem important—attracted energy or strength. Here is your cue what to write” (p. 9).

English teachers who teach writing often recommend Elbow (1975) because the practices add so much variety to the classroom experience. The variation is especially evident with numbers-oriented

SOBIE 2014

students because their lack of writing experience poses a high hurdle. To give students the opportunity to freely express their innermost thoughts without structural constraints is a new experience that many scholars find uncomfortable; in the end, the dedicated learners deftly conquer the unknown, calm the inner turbulence, and move ahead to attack the next dilemma because they know that confronting regulatory codes, solving client problems, and making sense of the unexplainable is all part of the daily routine in the accounting profession.

IMPROVING WRITING SKILLS IN BUSINESS WRITING STUDIES

Matherly and Burney (2009), *Using Peer-Reviewed Writing in the Accounting Curriculum: A Teaching Note*, write that faculties recognize the need to improve the quality of

their business writing; “at the same time, we often struggle to find sufficient time to cover course content. . . In this teaching note, we describe a writing framework that is a manageable tool for integrating writing activities into courses” (p.393). The framework incorporates peer review (a typical accounting task) and repetition that prior research suggests lead to writing improvements. Added benefits are engaging students in critical thinking activities and exposing them to more grammar content through handouts. Using a sample of 155 students, findings support that the framework improves students’ written communication (Matherly & Burney, 2009).

The Matherly and Burney (2009) framework requires students to complete three rounds of assignments, “each of which involves four activities: (1) a first-round draft of the assignment, (2) an out-of-class, blind peer review, (3) an in-class, blind peer review and (4) a revised version of the writing assignment” (p.394). This integration of writing as a component of the curriculum studies is beneficial to students because they are writing about subjects in their field. In many of the University of West Florida Accounting classes, writing elements are routinely integrated in the form of position papers, ethics stances, tax defenses, and financial statement research segments. Many of these activities are subsequently turned into small group presentations.

Matherly and Burney (2009) distribute “Minimum Writing Rules” and describe the peer-review process and the grading used for evaluation. The rules review many common mistakes made by business writers and provides grammar guidelines including the following sampling:

1. ALWAYS RUN SPELL/GRAMMAR CHECK.

SOBIE 2014

2. “It” refers to a thing, while “they” refers to humans. A company is a “thing,” so do not use the pronoun “they” when referring to a company—the proper pronoun is “it.”

3. “Its” is possessive, while “it’s” means “it is.”

4. “This” should not be used as a noun. Instead, use “this” as an adjective or adverb (i.e., improper use would be—“this leads to confusion”—“this” what?).

5. A singular antecedent (manager) requires a singular pronoun (such as he or she).

(Matherly & Burney, 2009, p. 400)

UWF Business Writing

The UWF College of Business is accredited by AACSB International and “fewer than 4.7% of business schools worldwide have earned this education standard” (UWF College of Business, 2014, para. 6). In addition, according to the National Association of State Board of Accountancy (NASBA), the UWF Department of Accounting and Finance is “ranked No. 5 in the U.S. for first-time pass rates by small accounting programs on the CPA exam” (as cited in UWF Online Newsroom, 2013, para. 1). To ensure high written communication standards, business majors must complete a semester-long business writing theory and practice class in addition to achieving ongoing writing proficiencies in major core classes.

In UWF’s Writing for Business: Theory & Practice class, grammar review, small group activities, research writing, and various types of business documents accompanied by oral and written presentations provide foundational curriculum supported by instructional lectures. The class operates in a computer lab with the latest in “smart” technology available to students. Timed tests include grammar sections and business letters and memos written in class. This educational experience is a Gordon Rule course requiring that students write a minimum of 6,000 words. Many students accomplish that requirement within the required research paper.

In *Real Good Grammar Too: A Handbook for Students and Professionals*, Hixon (1997) provides grammar guideposts with “Your Turn” exercises. Hixon’s extensive supplementary materials are used in the following areas: Diction, Quotation Technique, Pronoun Case, Pronoun Reference and Antecedent Agreement, Semicolons and Colons, Subject-Verb agreement, Verb Forms and Tenses, Hyphenation, Capitalization, Commas, Possessives/Apostrophes, Adjectives and Adverbs, Dangling and Misplaced Modifiers, Parallelism, Faulty Comparisons, and Sentence Errors. (Please see Appendix: Figure II. for Diction/Usage sample, ‘Your Turn’ Test, and Answer Key. Reprinted with permission by M. Hixon.)

The UWF Writing for Business: Theory & Practice class trains students to produce appropriate business messages including electronic messages and digital media, memorandums versus emails, business proposals and business reports, positive messages, persuasive messages, and negative messages.

As potential managers, it is paramount that students learn what vehicles can communicate messages effectively. Helen Soter, UWF Writing for Business: Theory & Practice instructor, stresses proficient patterns designed to portray the business in a consistently professional manner. Further, this instructor is intent on preparing students for studies and careers with accelerated expectations because professional writing is a way of life in business.

The business writing class features a semester-long assignment with instruction on how to properly develop, write, and execute formal research. Choosing from two topics, the class project is broken into four components: scholarly sources and an early draft of the formal report, workshop involving peer-review of formal report, paper-reading done in the writing lab, and final written presentation of the formal report. This is followed by a separate oral presentation of the project. While working on this project, students are simultaneously instructed on such important topics as plagiarism and APA format. The initiative provides a foundational cornerstone that is fundamental to the success of students in future studies and business careers.

UWF Writing Lab

An important tool in the student's writing arsenal is the Writing Lab where Ms. Hixon specially trains teams of grammarians and complements them with a state-of-the-art writing website. The UWF Writing Lab supports all majors and provides students with a professional resource that equals the nationally reputed bellwether Purdue Owl. The Writing Lab offers a comprehensive diagnostic test used in business writing to identify skill proficiencies and weekly sessions crafted to refresh student writing skills in identified areas. Another important service offered by the Writing Lab is paper review which is mandatory for business writing research.

UWF College of Business Writing Lab

The UWF College of Business Writing Lab is a satellite of the Writing Lab located in the new College of Business Education Center. Staffed by specially-trained students, the COB Writing Lab works exclusively with Business majors reviewing papers on topics from complex financial principles to policy strategies. The specialized resource is invaluable to Writing for Business: Theory & Practice students in their quest to prepare formal research projects.

Conclusions and Recommendations

Excellent writing skills in business are no longer an art of the few, but a mandate for the many. In our interdependent micro and macro global economy, competitive forces are intense. This scenario requires enhanced actions not only from the best and the brightest, but also from the average and the solid. Accounting students preparing to manage financial concerns at home and in international waters should listen to the advice of so many CPAs in practice and understand that writing ability is equated to critical thinking which is paramount to business growth. Heightened norms in writing, analysis, and cognitive skills are vital to accounting students today because the activity of crunching numbers in a distant cubicle has been replaced by a computer. The accountancy professional is meeting clients, auditing books, researching options, leading team collaborations, teaching complex principles, deciphering government regulations, filing returns, and crafting financial blueprints that ensure clients, communities, businesses, countries, and firms a viable financial future.

On the basis of these findings, the need does exist to improve writing skills in business generally and accounting specifically because they are linked with cognitive abilities required for leadership in a highly competitive global environment. Technology is a tool developed by thinking professionals to devise new economic navigational charts for expanding markets.

Teachers, as expected, are on the cutting edge of improving student writing skills because they understand the work that needs to be accomplished. What stakeholders, including students, need is an attitudinal shift of priorities because many believe that they are good writers when all of the scholarly research and the test scores prove that they are not.

If a picture is worth a thousand words, then an illustration is worth 10,000 words. A business writing classmate in Helen Soter's office redoing a writing assignment exclaimed, "But you don't understand, I was accepted at Florida State and the University of Florida. I am a smart kid. I had no idea that this class would be so hard." Helen Soter smiled knowingly and replied, "Yes, we do have high standards at UWF, and you did do so much better on your revised assignment. Keep up the good work."

The conclusion of this paper is that stakeholders need to champion a collective paradigm shift to improve student cognitive and writing skills with emphasis on the financial governance field of accountancy. Parents, educators, churches, firms, technology agents, societal groups, cultural segments, and literary forces need to focus on improving students' writing skills because there is a direct correlation between writing and critical thinking skills and as CPA Palen so eloquently stated, "If the accountant's practice is to grow, so must his (or her) ideas" (as cited in Flesher et al., 2009, p.6).

REFERENCES

Bruzzese, A. (2014, Jan 12). "Digital natives need 'soft skills' to secure a job."

Pensacola News Journal, p. 3F.

Chiurri, M., & Varaksina, A. (2006). "End of the myth: CPAs do have to write." *CPA Journal*, 76(5), 10-11.

Elbow, P. (1975). *Writing without teachers*. New York, NY: Oxford University Press.

Etter, E. & Ross, B. (2013). "The use of article summaries in accounting courses: Improving students' reading comprehension, learning, thinking, and communication skills." *American Journal of Business Education (Online)*, 6(6), 595.

Firch, T., Campbell, A., Filling, S., & Lindsay, D. (2011). "An accounting writing proficiency survey." *American Journal of Business Education*, 4(4), 15-23.

Flesher, D., Previts, G., & Sharp, A. (2009). "Jennie May Palen, accountant and poet, 1891-1990: The writing dimension of accounting." *The CPA Journal*, 79(12), 6+.

Glenn, C., Goldwaithe, M., & Connors, R. (2008). *The St. Martin's Guide to Teaching Writing*. Boston, MA: Bedford/St. Martin's.

Hixon, M. (1997). *Real Good Grammar Too: A Handbook for Students and Professionals*.

Pensacola, Florida: University of West Florida.

Irving, J. H. (2011). "Integrating research into an undergraduate accounting course." *Issues in Accounting Education*, 26(2), 287-303.

Kranacher, M. (2007). "The problem with communication ..." *The CPA Journal*, 77(7), 80.

Matherly, M. & Burney, L. (2009). "Using peer-reviewed writing in the accounting curriculum: A teaching note." *Issues in Accounting Education*, 24(3), 393-413.

Micciche, L. (2004). "Making a case for rhetorical grammar." *College Composition and Communication*, 55(4), 716-737.

Parham, A., Noland, T. & Kelly, J. (2012). "Accounting majors' perceptions of future career skills: An exploratory analysis." *American Journal of Business Education (Online)*, 5(1), 29.

Reinstein, A., & Trebby, J. (1997). "How accounting educators can help improve their students' writing skills." *Journal of Education for Business*, 73(2), 105-113.

Reinstein, A., Weirich, T., & Nellerroe, D. (1999). "Implications of US Securities and Exchange Commission rule #33-7380 in the improvement of accounting students' writing skills." *Managerial Auditing Journal*, 14(9), 479-486.

Simkin, M., Crews, J., & Groves, M. (2012). "Student perceptions of their writing skills: Myth and reality." *Journal of Business and Management*, 18(1), 81-95.

Strunk, W., & White, E.B. (1935/1979). *The Elements of Style*. New York, N.Y. MacMillan.

Thompson, T. (2010). "Writing and the CPA exam." *The CPA Journal*, 80(2), 15.

UWF College of Business. (2014). In *UWF's online website*. Retrieved from <http://uwf.edu/cob/>

UWF Online Newsroom. (2013). *UWF top ranked in nation*. Retrieved from UWF online <http://news.uwf.edu/index.php/2013/03/university-west-florida-top-ranked-nation-florida-cpa>

Appendix: Figure I. *The St. Martin's Guide to Teaching Writing*, Glenn, Goldwaithe, and Connors. Copyright 2008 by Bedford/St. Martins. Used with permission of the publisher.

<p>“Answer these questions about your peer’s draft, you’ll improve drastically and quickly your ability to answer the same questions about your own draft” (p. 67).</p>
<p>1. The assignment. Does the draft carry out the assignment?</p>
<p>2. The title and introduction. Does the title tell the reader what the draft is about? Does it catch the reader’s interest? What does the opening accomplish in terms of hooking the reader’s interest, establishing common ground, and establishing the writer’s ethos (character, credibility, and correct grammar)?</p>
<p>3. The thesis and purpose. Paraphrase the thesis as a promise: “In this essay I will. . .” Does the draft fulfill that promise? Why or why not? What is the writer’s purpose?</p>
<p>4. The audience. Who is the audience? How does the draft capture the interest and goodwill of the audience? What values does the audience hold that are different from the writer’s?</p>
<p>5. The exigence (issue). What is the situation or context that calls for the writer’s rhetorical (persuasive) transaction?</p>
<p>6. The rhetorical stance. Where does the writer stand on issues involved with this topic? What word or phrases to the draft indicate the value the writer holds with regards to this topic? How does the writer identify his or her cause with the interests (or different values) of his or her audience?</p>
<p>7. The supporting points. List the main points in order. Number them in order of interest to you. Which of them could be explained or supported more fully? What evidence, examples, or details might do the trick? Which of the supporting points could be de-emphasized or eliminated?</p>
<p>8. The paragraphs. Which paragraphs are clearest? Best developed? Which paragraphs need further development? What kinds of information might help?</p>
<p>9. The organization. How is the draft organized—chronologically, emphatically, or in some other way? Given the organizational pattern could the main points be presented in a more effective way? What suggestions can you make for transitions between paragraphs that would make connections clearer and easier to follow?</p>
<p>10. The sentence. Choose three sentences you consider the best written—stylistically, effective, entertaining, or otherwise memorable. Then choose three sentences you see as weak—confusing, awkward, or uninspiring. Advise your peer on how to revise these three sentences.</p>

SOBIE 2014

11. The words. Circle the words that are particularly effective; underline those that are weak, vague, or unclear. Do any words need to be defined or replaced? Are there any potentially offensive words in the draft?

12. The tone. What dominant impression does the draft create—serious, humorous, satiric, persuasive, argumentative, or objective? Is the tone appropriate to the topic and audience? Is it consistent? Mark specific places where the writer’s voice came through most clearly. Ask the writer if this is the intended tone—and if he or she finds your comments surprising?

13. The conclusion. Does the draft conclude in a memorable way? Does it end abruptly? Trail off? Restate the introduction? If you like the conclusion, give two reasons why.

14. Final thoughts. What are the main strengths of this draft? Weaknesses? What surprised you—and why? What do you want to know more about? What is the writer’s single most important comment or point? (P.68)

Appendix: Figure II. Diction/Usage sample, ‘Your Turn’ Test, and Answer Key (Hixon, 1997, p.71,83-84). Reprinted with permission by M. Hixon.

Diction • 71

DICTION/USAGE

Following is a glossary of some commonly misused words, that is, words that are commonly misused, confused, and misspelled by many—the “many” usually being people who have no “authority” or “credibility” in the area of grammar. So remember not to allow popular usage/misusage to influence your decision to use the correct form, which is probably the least used by those who have no “authority.” If a speaker says, “Irregardless of what you seen...,” then that person has no grammatical authority.

The following alphabetized list provides definitions and examples. Explanations are based on the requirements of standard written English, not “conversational” English. If no “hard and fast” rule prevails for a certain usage, other labels are used such as “questionable,” “mixed,” or “divided.”

A, AN Use *a* before words with an initial consonant sound; use *an* before words with an initial vowel sound. Note that it is not the initial letter of the word, but the initial sound that dictates usage.

<p>a AAA card (triple A card)</p> <p>a director</p> <p>a university</p> <p>a historical landmark</p> <p>a humble person</p> <p>a history class</p> <p>a union</p> <p>a magician</p> <p>a <i>u</i> or a <i>d</i></p> <p>a defensive team</p> <p>a CPA</p> <p>a National Football League player</p> <p>a unique situation</p>	<p>an AA member</p> <p>an actress</p> <p>an emphatic statement</p> <p>an honorary degree</p> <p>an hour</p> <p>an ice breaker</p> <p>an understatement</p> <p>an <i>m</i> or an <i>n</i></p> <p>an official document</p> <p>an orchestra</p> <p>an MBA degree</p> <p>an NFL player</p> <p>an unforgettable day</p>
---	--

A LOT, ALOT* Despite the popular misspelling, *a lot* is always two words. The preferred usage is to substitute *a lot* for *several* or *many*. Careful writers of standard English avoid the use of *a lot* altogether.

INFORMAL: *A lot* of words in the English language are used interchangeably.

FORMAL: Many words in the English language are used interchangeably.

ACCEPT, EXCEPT The similarity in sound causes these words to be confused. *Accept* means “take or receive, consent to receive; say *yes* to.” It is always a verb.

I graciously *accept* your invitation.

Lyn *accepted* the trophy on behalf of the cheerleaders.

Except is most commonly used as a preposition meaning “but”:

Every room *except* the family room was repaired.

Everyone received a bonus *except* me.

In formal English, *except* is also used as a verb meaning “take out; leave out; exclude; exempt; excuse”:

Mothers of small children are generally *excepted* from jury duty.

ADVICE, ADVISE These words are commonly misused because they are commonly mispronounced. Remember that *advice*, the noun, has *vicelice* on the end of it and that *advise*, the verb, rhymes with *devise*. *Advice* means “counsel or recommendation”; *advise* means “to counsel or recommend.”

Many people write to “Dear Abby” for *advice*.

The protesters were *advised* to submit a list of their grievances.

“Be leery of giving *advice*. wise men don’t need it, and fools don’t heed it.”

* Nonstandard Usage

SOBIE 2014

Real Good Grammar Too: Diction/Usage Test and Key (Hixon, 1997, p. 83-84).

YOUR TURN

Change underlined words which are used incorrectly.

1. *Alot* of people are *effected* by the rise and fall of the stock market.
2. Mrs. Rearden uses *a* old-fashioned disciplinary approach which is *altogether different than* mine.
3. Credit card interest rates are *too* high.
4. The Clarks owe more *then* five thousand dollars in deferred mortgage payments.
5. *Fewer* airlines are feeling the *effects* of the pilots' strike.
6. *There* has been proposed legislation for defense spending.
7. The main *criteria* for admission is the ACT score.
8. Clarence Thomas has been *among* the most controversial nominees for Justice of the Supreme Court.
9. Most actors and actresses don't do *they're* own stunts.
10. The new retirement plan has *less* limitations *than* the old one.
11. The University has *already* extended *it's* drop-add period.
12. He is either *an* RN or *a* LPN.
13. *Hopefully*, *their* history-making flight will be a *real* smooth one.
14. If *less* than ten students enroll, the class will be cancelled.
15. *Lady Liberty* looks very *different than* the way she *use* to look.
16. One is *suppose* to work hard for the things he believes in.
17. Most of my ancestors *lead* sheltered lives when they were growing up.
18. *Most* everyone learned the differences *between* the eight parts of speech in junior high school.
19. I took my faculty advisor's *advise* and enrolled in a course on a pass/fail basis.
20. One *affect* of drinking while driving is that it slows a driver's reaction time.
21. The reason I ordered these books is *because* they discuss the Vietnam War from *an* historical perspective.
22. In sociology, a "simsoc" is *when* a society is simulated.
23. The gymnast *effected* a perfect turn on the balance beam.
24. This paper contains a large *amount* of grammatical errors which are *because of* carelessness.
25. I was delayed *due to* the traffic jam.
26. I am *enthused* about the project *irregardless* of its outcome.
27. The company *should of* *excepted* his offer.
28. *Due to the fact that* the applicant has no credit history, the bank cannot *loan* her the money.
29. I *cannot help but* ignore your violent protestations.
30. It *maybe* *alright* for the *principle* characters to miss a rehearsal.

Real Good Grammar Too: Diction/Usage Test and Key continued (Hixon, 1997, p. 84)

84 • Diction

31. Let's *try and* create more harmony *between* the county commissioners.
32. The choir acted *like* they had forgotten the lyrics.
33. The United Nations has requested that each country send *less* representatives.
34. *Most* all his remarks were *besides* the point.
35. I'm *kind of* excited about the possibility of getting a promotion.
36. This is *a* honor he deserves.
37. She was chosen as the *principle* investigator for the case.
38. Most college freshmen are *sort of* confused during the first week of classes.
39. These *kind of* plants need *alot* of attention.
40. This is the *kind of* jacket I'm looking for.
41. Is there one specific *criteria* which the committee considers more than others?

KEY

- | | | |
|--|----------------------------------|----------------------------------|
| 1. a lot, affected | 14. fewer | 28. Because, lend |
| 2. an, altogether (Correct),
different from | 15. different from, used to | 29. cannot help ignoring |
| 3. Correct | 16. supposed to | 30. may be, all right, principal |
| 4. than | 17. led | 31. try to, among |
| 5. Correct | 18. Almost, between (Correct) | 32. as if |
| 6. Correct | 19. advice | 33. fewer |
| 7. criterion | 20. effect | 34. Almost, beside |
| 8. Correct | 21. that, a | 35. rather |
| 9. their | 22. is a simulated society | 6. an |
| 10. fewer, than (Correct) | 23. Correct | 37. principal |
| 11. already (Correct), its | 24. number, due to | 38. rather/somewhat |
| 12. an (Correct), an | 25. because of | 39. kinds of, a lot |
| 13. <i>It is hoped that/Perhaps, their</i>
(Correct), very (or another
adverb) | 26. enthusiastic, regardless | 40. Correct |
| | 27. <i>should have, accepted</i> | 41. <i>criterion</i> |

The Impact of Work-Life Balance on Entrepreneurial Sustainability

Dr. Krystal Brue, Assistant Professor, Cameron University

Abstract

For the entrepreneur, managing work and family obligations is an element of successful business operations. Examining work-life balance constructs, this study examined familial/spousal social support, work-family integration/blurring, and work-family conflict (WFC) to determine how these phenomena influenced perceived entrepreneurial profitability and longevity. Surveying 102 small business owners located in Oklahoma, Texas, and Kansas, whom were registered with the Small Business Development Center, this correlational research explored work-life balance strategies to help small business ventures increase operational longevity and perceived profitability. Business owners recognized instrumental support as the most significant perceived social support from spouses and family members ($M = 8.36$, $SD = 1.94$). A majority of owners (67.35%) indicated difficulty delineating between work and personal roles. Within this sample, time-based WFC ($M = 20.54$) was more apparent than strain-based WFC ($M = 18.98$). Statistically significant correlations existed between composite familial/spousal social support and work-family integration/blurring ($r = .278$, $p < .05$), as well as work-family integration/blurring and composite WFC ($r = .319$, $p = .001$). Using standard multiple and binary logistic regression analyses, this study revealed that composite familial/spousal social support (including emotional, instrumental, appraisal, and informational), work-family integration/blurring, and WFC (including time-based and strain-based) did not significantly predict entrepreneurial longevity ($R = .108$, $R^2 = .012$, $p > .05$), nor perceived profitability ($\beta = -.046$ for familial/spousal social support, $\beta = -.026$ for work-family integration/blurring, and $\beta = .033$ for WFC). Therefore, familial/spousal social support, work-family integration/blurring, and WFC did not significantly explain the variance in perceived longevity and profitability. However, work-family integration/blurring, time-based WFC, and strain-based WFC segments did slightly, but significantly predict operational longevity ($R = .411$, $R^2 = .169$, $p < .005$). In addition, familial social support ($\beta = -.363$) and work-family integration/blurring ($\beta = .425$) explained 20.7% of the variance ($R = .471$, $\Delta R^2 = .207$, $p < .001$) in composite WFC. Future research should continue to determine other work-life balance elements, such as workloads or work hours that may influence the sustainability of small businesses. Expanding measures of small business owner productivity to include employee expansion or gains in sales was also recommended.

Introduction

Currently over 27 million small businesses operate in the U.S., representing 99.7% of all U.S. companies; additionally, over half of all private sector employees work for small businesses (Small Business Administration, 2012). A complex set of financial, economic, marketing, sales, and human relation dynamics influences the longevity and profitability of a small business (Chow & Dunkelberg, 2011; Cronin-Gilmore, 2012). Half of all entrepreneur ventures will close within their first five years of business and only 25% of small businesses will survive for more than 15 years (Knaup & Piazza, 2007). With a high failure rate, identifying strategies for improving small business sustainability is

essential.

Distinctly evident in small business ventures is the impact of work and family obligations on the success of a business (Werbel & Danes, 2010). Increasing the overlap between work and family domains has resulted in a spectrum of outcomes ranging from failing to manage competing work-family demands to mutually benefiting role participation within each domain (Michel & Clark, 2009; Michel, Mitchelson, Pichler, & Cullen, 2010; Winkel & Clayton, 2010). Poorly managed work-family conflict (WFC) has led to a decreased sense of work-life balance, increased perceptions of time pressure, a decline in work satisfaction and success, as well as an amplification of the cognitive dissonance between the demands of family and work (Hilbrecht, Shaw, Johnson, & Andrey, 2008). Work and non-work domains have increasingly overlapped as employees progressively feel the effects of conflict between personal lives, family, and work (Lazar, Osoian, & Ratiu, 2010).

The purpose of this correlational study was to explore perceived familial/spousal social support, work-family integration/blurring, and WFC to discover their statistical predictive relationships with small business perceived profitability and longevity. The objective was to clarify the familial/spousal social support, work-family integration/blurring, and WFC as perceived by the small business owner and examine the relationship between these constructs and perceived profitability and longevity. Three established scales were used to determine participants' perceptions regarding work-life balance constructs of social support, work-family integration/blurring, and WFC. Examining sources of familial/spousal social support used in reducing WFC, Parasuraman, Greenhaus, and Granrose's (1992) social support scale was used to assess the emotional, instrumental, appraisal, and informational types of support provided by family members and spouses, which may affect the respondent at work. The Work-Family Integration-Blurring scale developed by Desrochers, Hilton, and Larwood (2005) was used to examine the integration of work and family roles. Carlson, Kacmar, and Williams' (2000) WFC scale was used to assess time-based and strain-based conflict and its effect on the homeostasis between home and work.

Theoretical Framework

Broadly focused on the daily management that occurs between work and non-work activities, work-life balance encompasses both the harmony and interference that occurs between paid work and non-work activities (Chang, McDonald, & Burton, 2010). Work-life interference, also called work-life conflict or WFC, is comprised of two distinct yet linked concepts: work interfering with family and family interfering with work (Chang et al., 2010; Moreno-Jiménez et al., 2009). WFC has been identified as the antecedent to work-life imbalance as well as other organizational employee wellness issues such as stress, professional burnout, poor organizational citizenship behaviors, turnover, and absenteeism (Al-Qutop & Harrim, 2011; Chang et al., 2010; Maertz & Boyar, 2011; Steinmetz, Frese, & Schmidt, 2008; ten Brummelhus & van der Lippe, 2010). In order to promote improved quality of life, minimize job dissatisfaction, work fatigue, and absenteeism, as well as expand work performance and organizational commitment, Human Resource (HR) managers have initiated work-life policies giving employees improved scheduling flexibility, child and adult care services, and peer/supervisor emotional support (Breaugh & Frye, 2008; ten Brummelhuis & van der Lippe, 2010). While these HR initiatives have proven their value in mid to large organizations (Quick, Henley, & Quick, 2004), small businesses are limited in their financial resources available to assist in managing work-life

balance issues. Determining if social support, which is a frequently accessible and low cost resource for small business ventures, addresses work-life concerns was an area in need of further research development.

Initially, work-life balance research focused on the negative consequences of work and family interference. More recently, researchers have identified the plethora of work-family enrichment and facilitation benefits, have re-focused research away from the conventional strain role-relationship paradigm, and have redefined the potential resources gained by seeking greater equilibrium between work and life domains (Chang et al., 2010). Work-family enrichment involves the extent to which resources, skills, and experiences in one domain or role improve well-being in another role or domain (Greenhaus & Powell, 2006). The dyadic nature of work-family crossover between role resources, coupled with the intra-individual resources that are transmitted within an employee, supports the notion that work affects an employee's well-being and family affects an individual's performance at work (Demerouti, 2012). In a review of work-life balance research, Chang et al. (2010) suggested work and family studies have grown exponentially, emphasizing the prominence of balance and enrichment over conflict as a dominant construct.

Conservation of Resources (COR) theory, originally proposed by Hobfoll (1989), suggested individuals were motivated to secure and maintain support and resources, which were perceived to help them achieve their goals. The use of COR theory provides researchers with a constructive perspective on the link between work and life roles among entrepreneurs. Integrating environmental and cognitive models of resource support, Hobfoll (2001) determined individuals sought supportive resources, which aided in goal achievement. Hobfoll (1989) suggested through his system's model that individuals instinctively sought resources that brought them affirmations and felt tension when resources were threatened (Hobfoll, 1989). Acknowledgement of COR theory affords a valuable HR perspective on work-life balance issues, allowing researchers and practitioners to integrate conflict and support into an enrichment theoretical framework (Halbesleben, Zellars, Carlson, Perrewé, & Rotondo, 2010; Werbel & Danes, 2010).

Research Questions

The intent of this correlational study was to explore perceived familial/spousal social support, work-family integration/blurring, and WFC to discover their statistical predictive relationships with small business perceived profitability and longevity. Two generalized research queries were used to guide this study. First, what type of support do family members play in the success of a small business? Secondly, what type of resource drain do family members cause, which negatively influences a small business's success? Discerning the integral relationship between familial support and work-life balance with small business success provided both greater potential for economic entrepreneurial growth as well as investigated an area that lacked empirical research. Three key research variables guided this study: familial/spousal social support, work-family integration/blurring, and WFC.

In addition to suggesting individuals seek supportive resources, which are perceived to help

them achieve their goals, COR theorists proposed the potential loss of resources or support triggered individuals to engage in behaviors designed to avoid further loss (Hobfoll, 2001). Spouses and family members of small business owners have provided needed supporting resources to aid in the business's survival as well as needed instrumental and emotional support essential in reducing emotional exhaustion depletion (Halbesleben et al., 2010). Realizing that spousal and familial support played a critical role in work and family satisfaction (Halbesleben et al., 2010), this study examined if spousal and familial support moderated the work-related strain of owning a small business.

The stress that small business owners feel combining work and family domains is significant (Leaptrott, 2009; Werbel & Danes, 2010). Familial/spousal social support, which eases this stress, can take several forms. Emotional support (empathy, care, concern, and trust), instrumental support (time, money, resources, responsibility, and energy), appraisal support (assessment, consideration, approval, and opinion), and informational support (advice, insights, and suggestions) are essential in reducing WFC and increasing work-life balance (van Daalen et al., 2006). The concepts of emotional, instrumental, appraisal, and informational supports have not been investigated within a small business context. Understanding how these support tactics help or hinder a small business's success will help further perpetuate elemental economic growth.

Considering small business sustainability, familial/spousal social support, work-family integration/blurring, and WFC, the following research questions guided this study.

Q1. What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business longevity?

Q2. What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business owner's perceived profitability?

Hypotheses

When considering the predictive relationship between emotional, instrumental, appraisal, and informational types of familial/spousal social support, work-family integration/blurring, and time-based and strain-based WFC, on a small business's longevity (Q1), the following hypotheses apply.

H1₀. Participant perceived familial/spousal social support, work-family integration/blurring, and WFC does not statistically significantly explain the variance in participant perceived small business longevity.

H1_a. Participant perceived familial/spousal social support, work-family integration/blurring, and WFC does statistically significantly explain the variance in participant perceived small business longevity.

When considering the predictive relationship between emotional, instrumental, appraisal, and informational types of familial/spousal social support, work-family integration/blurring, and time-based and strain based WFC, on small business owners' perceived profitability (Q2), the following hypotheses apply.

H2₀. Participant perceived familial/spousal social support, work-family integration/blurring, and WFC does not statistically significantly explain the variance in participant perceived small business profitability.

H2_a. Participant perceived familial/spousal social support, work-family integration/blurring, and WFC does statistically significantly explain the variance in participant perceived small business profitability.

Work-Family Conflict

A conflict framework can be seen in much of the initial work-life balance research; Greenhaus and Beutell (1985) initially suggested that WFC occurred when obligations, pressures, actions, and behaviors of one role impeded responsibility fulfillment in another role. Greenhaus and Beutell's definition identified three distinct forms associated with failing to balance work and family obligations: time-based conflict, strain-based conflict, and behavior-based conflict. With each of these conflict dimensions, compliance in one domain yielded compliance difficulties in another domain (Ode-Dusseau, Britt, & Greene-Shortridge, 2012).

Time-based conflict resulted from the inability to complete obligations and requirements of a role due to the time devoted to other domains (Greenhaus & Beutell, 1985; van Daalen et al., 2006). Time-based conflict also resulted because an individual could not occupy two roles simultaneously and ensued when an individual was physically present in one domain but mentally preoccupied with the other (Greenhaus & Beutell, 1985). Strain-based conflict resulted when the role in one domain spilled over and affected interactions within the other domain (Greenhaus & Beutell, 1985). This type of role strain made it difficult to fulfill requirements or function effectively in the other role. In this strain-based situation, frequently the harmful negative effects of work were manifested in the home environment as employees displaced their work stress on family members (Quick et al., 2004). Finally, behavioral-strain conflict occurred when actions such as leadership, management, or interpersonal styles that were accepted and even rewarded in one domain became incompatible with behaviors desired in the other domain. Behaviors, which were developed to produce improved satisfaction in one role, were negatively perceived when implemented in another domain. This behavioral-based conflict occurred when individuals failed to recognize the need to adjust attitudes, actions, and behaviors between home and work (Greenhaus & Beutell, 1985).

In addition to considering the form of WFC, researchers have also considered the direction the conflict was perceived. Potentially WFC could result from individuals' work domains interfering with their home and family responsibilities; termed work interference with family (WIF), this type of conflict occurred when work pressures negatively encroached upon home life (Chang et al., 2010;

Mitchelson, 2009). Family interference with work (FIW) resulted when family responsibilities affected individuals work roles (Chang et al., 2010; Mitchelson, 2009). Considering both the direction and form of WFC, six WFC components have emerged including: time-based WIF, time-based FIW, strain-based WIF, strain-based FIW, behavior-based WIF, and behavior-based FIW (Mitchelson, 2009).

Within previous research, WFC also termed work-life conflict encompassed the discord felt when employment or family demands such as time and strain interfered with performing family-related or work-related tasks (Moreno-Jiménez et al., 2009). While WFC was often referred to as the overarching concept involving the struggles between home and work, some researchers differentiated between types of conflict noting work-to-family conflict, also identified as WFC, referred to the dissonance felt when work commitments impeded family time and family-to-work conflict (FWC) expressly addressed when family demands impeded work roles (Moreno-Jiménez et al., 2009). For this study, the overarching WFC concept influencing work outcomes was the focus.

Work-life Balance

The process of managing work and family obligations is considered an imperative labor force and societal issue (Carlson, Kacmar, & Williams, 2009). Greenhaus and Beutell (1985) initially suggested the attainment of work-life balance requires energy, time, and commitment distribution across work and non-work domains. Later, Clark (2000) defined work-life balance as the minimization of role conflict as well as the successful performance and effective functioning between home and work. Hilbrecht et al. (2008) added that work-life balance discussions should examine the consuming nature of work including the quantity of work hours, the intensity of the work schedule, and the control of work obligations. Hilbrecht et al. (2008) concluded that work-life discourse resulted in the abandonment of critical relationships and obligations as well as the harmful increase of physical, mental, and emotional quality of life issues.

Gregory and Milner (2009) described work-life balance as the cultural and innate bond between work and non-work time and space; an equilibrium between these two roles increased the flexibility and independence of an individual balancing their interest, time, and physical presence in both work and home domains. Grzywacz and Carlson (2007) added to this concept by suggesting that work-life balance involved the achievement of domain related expectations that became mutual and managed between an individual's work and family roles. Carlson et al. (2009) inferred from these definitions that work-life balance did not suggest that an individual excelled in both the family and work domains. Effective work-life balance occurred when individuals maintained mutually agreed upon requirements in each role, met essential domain responsibilities within each role, and released perfectionistic needs, which demanded high levels of success or effectiveness in both or either role (Carlson et al., 2009).

Small Business Dynamics

Small businesses and entrepreneurial ventures significantly sustain the U.S. economy.

Neumark, Wall, & Zhang (2011) concluded that small firms create more employment opportunities when compared to mid and large size business establishments. According to the Small Business Administration (2012), U.S. small businesses have produced 65% or 9.8 million of the net new employment opportunities in the past 17 years and employ half of U.S. workers. Zachary and Mishra (2010) acknowledged that entrepreneurial and small business research was needed to understand the comprehensively unique and vital role that these ventures play in the economy. Even though distinctions can be made between entrepreneurs and small business owners, these distinctions were outside the scope of this research.

In order for a small business to remain competitive, performance improvements are crucial (Latham, 2008). Similar to other high strain occupations, entrepreneurs must deal with the challenges of balancing work and life responsibilities. New entrepreneurs must make several strategic and critical decisions during the development of their business; in addition, they must balance the concurrent roles of work and life while managing the conflicting demands of time, energy, and resources needed for promoting family satisfaction and business success (Leaptrott, 2009). Small business ventures account for 50% of all private sector net employment increase (Headd & Kirchhoff, 2009).

New business ventures (NBV) provide essential economic growth to the economy; however, NBV must manage the competing commitments between what profits the business and what is valuable to the family (Werbel & Danes, 2010). Work-life conflict among entrepreneurs significantly affected the longevity, survival, and success of small businesses (Headd & Kirchhoff, 2009; Williams & Jones, 2010). Small business owners who learned to balance the conflicting demands of time and cognitive resources between their families and their businesses performed more effectively in both roles (Leaptrott, 2009).

Conservation of Resources Theory

When considering work-life balance concerns among entrepreneurs, COR theory provided a valuable systems perspective on the connection between work and life domains. Initially developed by Hobfoll (1989), this theory provided a new perspective on stress management by integrating environmental and cognitive models of stress; Hobfoll (1989; 2001) suggested goal-seeking individuals pursued positive reinforcements and strove to obtain and maintain supportive resources in their goal achievement. Additionally, COR theorists suggested impending resource forfeiture increased stress and frequently prompted individuals to act in such a way to avoid further loss (Hobfoll, 2001). This psychological model drew upon two perspectives: primarily, people instinctively sought resources that brought them pleasure and positive reinforcement, and moreover, the threat of resource loss, the net loss of resources, or the lack of resource gain lead to increased stress (Hobfoll, 1989). Hobfoll (2001) through COR predicted increase stress when individuals experienced resource deficiencies. Consequently, resource acquisition was of critical importance when individuals depleted their resource assets (Hobfoll, 2001). Resource depletion and resource support had a predictive nature in stress management considering the biological, cognitive, and social stress responses (Hobfoll, 1989).

With a desire to obtain, preserve, and develop cherished resources (Halbesleben, 2010; Hobfoll, 1989, 2001; Seiger & Wiese, 2009), individuals frequently devoted efforts to safeguard against resource loss and sought opportunities to promote resource attainment (Hobfoll, 2001). All individuals are affected by the scarcity paradigm meaning the availability of personal energy, stamina, and resources operate under limited confines (Schneider, Macey, Barbera, & Martin, 2009). Furthermore, individuals who expended a substantial amount of drive, effort, energy, and resources at work were left with a limited or depleted supply of resources or energy at home while individuals who were supported at home possessed greater resources and stamina to perform better at work (Halbesleben, Harvey, & Bolino, 2009).

Posited from a scarcity of resources as well as COR theory, Odle-Dusseau et al. (2012) suggested perceived stressors forecasted increased strain while familial and spousal support resources indirectly predicted improved organizational outcomes and reduced WFC. Conversely, Greenhaus and Powell's (2006) Work-Family Enrichment theory submitted that work and family roles directly influenced organizational outcomes, however, not through reduced WFC as suggested by Odle-Dusseau et al. (2012) but amplified perceptions of work-family enrichment. Despite these varied perceptual lenses, a linkage exists between organizational and family resources and subsequent employment success (Odle-Dusseau et al., 2012). Odle-Dusseau et al.'s research indicated that organizational support, such as a supportive supervisor, was a more significant predictor of improved organizational outcomes rather than family supportive organizational perceptions. In addition, Odle-Dusseau et al.'s research revealed that within a small business dynamic, spouses and family members were often the sole supportive resource available to the owner. Irrespective of the dynamic or the support type, COR provided an established model of the impact of family resources on employee success and offered an operational framework as to how entrepreneurs manage work-life stress, bolster support, and prevent resource loss.

Within the COR theory, social support and social-capital resources offered key components to working individuals aimed at reducing role stressors and buffering the relationship between family and work (Greenhaus & Powell, 2006; Michel et al., 2010). Social support frequently acted as a moderator by directly influencing WFC (Seiger & Wiese, 2009). In new business ventures, spousal support acted as social support often providing the entrepreneur emotional support, financial support, and frequently unpaid work support (Werbel & Danes, 2010). Conversely, spousal demands, family constraints, and the inability to manage work and family responsibilities acted as a resource drain on the small business owner (Werbel & Danes, 2010).

Research Methods and Design

The intent of this derivation study was to utilize established survey instruments to gather data on a small business owner population. Self-reporting surveys allowed the researcher to seek information regarding work-life balance constructs and analyze the nature of the relationship between familial/spousal social support, work-family integration/blurring, and WFC with a small business's longevity and perceived profitability. Utilizing COR theory (Hobfoll, 1989) as a foundational theoretical framework as well as a social support scale (Parasuraman et al., 1992), the Work-Family Integration-Blurring scale (Desrochers et al., 2005), and the Multidimensional Measure of Work-Family Conflict scale (Carlson et al., 2000), this correlational and predictive research study compared

survey results with perceived profitability and business longevity.

Initially, descriptive statistics including frequency distributions, central tendency measures, measures of variation, and standard deviations were computed on data collected. Correlational analyses were conducted to assess associations between explanatory and predictive variables. A standard multiple regression analysis was used to determine the predictive value familial/spousal social support (including emotional, instrumental, appraisal, and informational support), work-family blurring, and time-based and strain-based WFC has on business longevity. These same predictor variables were also used in a binary logistic multiple regression analysis to determine if they have an effect on owners' perceived profitability. These statistical analyses provided the target information needed to address the research questions and hypotheses.

For this research, 1,897 small business owners who were registered with the Oklahoma Small Business Development Center (SBDC) were identified as potential respondents in the study. Using the SBDC client list to provide a relevant sample allowed for a concentrated population of potential respondents who were inclined to not only participate in the survey, but also wanted to improve their own business sustainability. However, use of this sample may have skewed the results as the SBDC client population was inclined to seek multiple means, including work and education, to ensure and promote their business sustainability.

Participants were electronically directed to the Survey Monkey website to complete the survey. The first three questions of the assessment were designed to establish the respondent's participant criteria. Demographic information that was captured included marital status, children status, longevity of business, and perceived profitability. Location of the business (at a state level), number of employees, as well as industry type was also captured in order to provide the SBDC with follow-up data. Ownership of a small business, being married, and having children were requirements for participation in this study.

To ensure and safeguard external validity, a cross-sectional representative variety of small business owners in various industries were surveyed. Stevens (1996) recommended for behavioral science research, a ratio of 15 participants for each predictive value is needed. Using Stevens' (1996) formula for the study, 105 participants would be optimal. With over 1800 surveys dispersed throughout SBDCs, a participant rate of 6% was necessary to achieve an adequate sample size and to ensure the statistical significance of responses. Using the SBDC's constant contact system, 1,897 business owners received an email invitation to participate in this research study, and 124 individuals completed the survey, indicating a 6.5% participation rate.

Operational Variables

Longevity of business

With the longevity of a small business comes the expectation of economic growth, job creation, wealth creation, and economy development (Williams & Jones, 2010). Longevity was captured by simply asking respondents to specify how many years their business had been open, indicating to participants to round to the closest year. Within this survey, longevity denoted how long the business has been operational at the time of survey participation. While longevity of operation is a continuous ratio variable, this researcher measured longevity as a discrete variable, limiting length of operation strictly to years only. Responses could range from zero on up. The ratio data were used in a standard multiple regression analysis where all predictive factors were entered into the model simultaneously (Pallant, 2010). This analysis was used to determine the effect of independent predictive factors including familial/spousal social support (including emotional, instrumental, appraisal, and information support), work-family integration/blurring, and WFC (including time-based and strain-based conflict) on the criterion factor of longevity.

Profitability

A variety of criteria is often used to evaluate a small business's success. Wealth acquisition, financial performance, personal/professional recognition, personal satisfaction, and societal impact have been factors used to evaluate business success (Gorgievski, Ascalon, & Stephen, 2011). Because profitability varies greatly among different businesses, industry classification, and longevity of operation, perceived profitability was captured using a discrete categorical response of either "yes" the owner considers the business profitable or "no" the owner does not consider the business profitable. Although this forced respondents to select one of two binary possible outcomes, responses were used as a criterion variable in a binary logistic regression analysis to determine familial/spousal social support, work-family integration/blurring, and time/strain based WFC predicted profitability.

The use of categorical or nominal data in multiple regression analyses is the subject of some debate, as this type of statistical analysis generally requires interval/ratio type data. The use of quasi-interval scale data is an acceptable practice in business and psychological research (Engel, Bell, Meier, Martin, & Rumpel, 2011; Hasting & Finegan, 2011). The use of multivariate statistics, including binary logistic regressions, with ordinal and nominal data allows researchers to maintain the power and flexibility gained by using these methods while not violating the minor biases these tests involve (Winship & Mare, 1984). Carifio and Perla (2007) concluded that the use of non-interval and non-ratio data are appropriate and acceptable when analyzing results at a less than interval scale level using parametric analysis such as multiple regressions. Carifio and Perla (2007) also indicated that findings from these types of analyses could be effectively interpreted.

Social support

Social support was measured with a scale developed by Parasuraman et al. (1992); this scale focused on the four categories of support initially conceptualized by House (1981) including emotional, instrumental, appraisal, and informational. Social support of the owner's family and spouse was measured with two corresponding questions. For this research, scores were considered continuous interval variables; scores from individual questions ranged from 1 to 5 and composite family and spouse social support ranged from 4 to 20. Combined familial/spousal social support scores, which ranged from 8 to 40, were used in a standard multiple regression analyses with the business's longevity status and a binary logistic regression analysis with business owner perceived profitability.

Work-family integration-blurring

The Work-Family Integration-Blurring Scale of Desrochers et al. (2005) was utilized to evaluate the integration of work and family roles. This four-question assessment allowed participants to compare the separation or integration of work and family domains. Responses from a 5-point Likert scale were combined to form a composite score, reverse coding the final question due to its transposed wording. For this research, scores were considered continuous interval variables; scores from individual questions ranged from 1 to 5 and composite scores ranged from 4 to 20. This composite score was used as a predictor variable in multiple regression analyses with business longevity and a binary logistic regression analysis with perceived profitability.

Work-family conflict

Carlson et al.'s (2000) WFC survey assessed time-based, strain-based, and behavioral-based conflict. For this research, time-based and strain-based responses were compared with a business owner's perceived profitability and business longevity. Nine time-based family interference with work questions and nine strain-based family interference with work questions were included in this research. For this research, scores were considered continuous interval variables; scores from individual questions ranged from 1 to 5 and composite time-based and strain-based WFC scores ranged from 9 to 45. Combined time-based and strain-based conflict scores WFC scores were used as a predictor variable in a standard multiple regression analyses with the business' longevity status and a binary logistic regression analysis with business owner perceived profitability.

Data Collection, Processing, and Analysis

The research timeline for the study began with an initial joint email correspondence via the SBDC's constant contact system sent to prospective participants from this researcher and the Oklahoma Director of the SBDC. Interested participants were guided to a Survey Monkey website where respondents were initially provided a cover letter describing the research as well as the informed consent document. A second constant contact email was sent two weeks after the first email

to offer the survey again to any business owner who had not responded initially. After four weeks, contact was made with the Oklahoma Director of the SBDC indicating that a sufficient sample was achieved and confirmation was given when the findings were analyzed, an analysis would be provided to the SBDC.

Upon data collection completion, descriptive statistics were used to compute frequencies, means, and standard deviations for research variables. Testing assumptions including normality and collinearity was also assessed prior to inferential analyses. Appropriate correlational analyses were conducted initially to ensure that variables were related. Inferential statistics were conducted in order to test hypotheses and answer research questions. To test the null hypotheses, multivariate statistical analyses were conducted. The use of a standard multiple regression analysis allowed this researcher to address Question 1 and Hypotheses 1 by comparing the metric dependent variable longevity in order to see if this criterion variable was predicted by familial/spousal social support, work-family integration/blurring, and WFC (Pallant, 2010; Zikmund, Babin, Carr, & Griffin, 2010).

The use of a binary logistic regression analysis allowed this researcher to address Question 2 and Hypotheses 2 by comparing the dependent variable, perceived profitability in order to see if this criterion variable could be predicted by familial/spousal social support types, work-family integration/blurring, and time-based and strain-based WFC (Pallant, 2010; Zikmund et al., 2010). The use of a binary logistic (binominal) regression was an effective technique because criterion responses were one of two possible outcomes and were being compared to several explanatory variables (Pallant, 2010).

Results

One hundred and twenty-four individuals opened and voluntarily began participating in the survey. Four respondents partially completed questions, answering only the demographic and outcome variable questions; therefore, these participants' responses were removed from the data. Of the 120 who completed the survey, 116 participants reported that they were the owner or founder of the small business, 106 participants reported that they were married, and 105 reported that they had a child or children. Of the 120 who completed the survey, 18 failed to meet all three participation criteria and were removed from the data analysis. One hundred and two respondents remained within the analyzed cases. With $N = 102$, the Stevens' (1996) recommended level of 105 was closely approximated.

Respondents indicated that the size of their small businesses ranged from 0 to 85 employees, with $M = 7.37$, $SD = 13.86$. Forty-eight of the 102 businesses reported having between one and three employees and 10 business owners indicated that they had zero employees. Only three businesses reported having more than 50 employees, employing between 65 and 85 employees. One hundred and one of the 102 participants reported business headquarters located within Oklahoma, Texas, and Kansas. All industry classifications were represented with the largest classifications reported in the "other" category (22 businesses) and retail sales (14 businesses). Table 1 provides a description of all business industry classifications.

Table 3

Business industry classification frequency distribution

Industry Classification	Frequency	Percent
Agriculture, Food, and Natural Resources	10	9.8
Architecture and Construction	6	5.9
Arts, Audio/Visual Technology, and Communications	5	4.9
Business	2	2.0
Education and Training	5	4.9
Facilities and Maintenance	2	2.0
Finance	3	2.9
Government and Public Administration	1	1.0
Health Care and Science	8	7.8
Information Technology	4	3.9
Manufacturing	9	8.8
Retail Sales	14	13.7
Science, Technology, Engineering, and Mathematics	3	2.9
Service Industry	7	6.9
Transportation, Distribution, and Logistics	1	1.0
Other	22	21.6
Total	102	100.0

Descriptive statistics of all outcome and composite predictor variables are provided within the sections below. Table 2 also provides information regarding means, *SD*, skewness, and kurtosis for each of the operational variables except for perceived profitability. Because perceived profitability was captured as nominal data, percentages of responses are discussed in the profitability subheading. Skewness and kurtosis results indicated only work-family integration/blurring results were normally distributed. Composite social support and WFC results were moderately distributed and were left unchanged for statistical analysis. Longevity was transformed to reduce extreme skewness and kurtosis. To test normality further, Kolmogorov-Smirnova and Shapiro-Wilk assessments were conducted. Results indicated that significance tests were all less than .05, confirming all outcome and predictor variables were slightly to extremely non-normally distributed.

Table 4

Descriptive statistics for outcome and explanatory composite variables

		Years	Social Support	Integration Blurring	WFC
N	Valid	102	102	102	102
	Missing	0	0	0	0
	Mean	8.2843	28.9706	13.4706	39.5196
	Std. Deviation	9.93780	7.34774	3.74881	12.27630
	Variance	98.760	53.989	14.054	150.708
	Skewness	2.432	-.817	-.166	.644
	Std. Error of Skewness	.239	.239	.239	.239
	Kurtosis	6.570	.407	-.854	1.154
	Std. Error of Kurtosis	.474	.474	.474	.474
	Range	50.00	32.00	15.00	63.00
	Minimum Possible		8	4	18
	Maximum Possible		40	20	90

Preceding inferential analyses, variable data including longevity (years), perceived profitability, composite familial/spousal social support, work-family integration/blurring, and WFC were screened for out of range values, outliers, missing data, nonlinearity, heteroscedasticity, normality including skewness and kurtosis, and multicollinearity. Four missing values on the social support scale were replaced by the mean of all cases within that question. The three missing values for perceived profitability were left blank. The lack of a distributed split in perceived profitability (81 profitable to 18 not profitable) truncated its correlations with predictive variables, but was retained for a binary logistic regression analysis. To address normality issues with longevity linearity and reduce substantial positive skewness, longevity was logarithmically transformed.

Longevity

Business owners were asked to indicate how many years their businesses had been open or operational, rounding to the closest year. Responses ranged from 0 to 50 years, with $M = 8.28$ years

and $SD = 9.94$. Fifty-nine of the 102 respondents indicated their business was 5 years old or less, 19 owners indicated that their business was between 6 and 10 years old, and nine owners indicated their business had been opened between 11 and 15 years. Seven of the respondents indicated their business had been opened between 25 to 50 years.

Because longevity data were extremely skewed, square root and log transformations were conducted to determine which more appropriately improved the linearity and normality of the data. The logarithmical transformation provided the best solution for a normal distribution. With transformed longevity data, skewness was transformed from 2.432 to .329 and kurtosis was transformed from 6.570 to -.295.

Profitability

Business owners were also asked to indicate if they perceived their businesses to be profitable. Three respondents failed to answer this question, leaving 99 respondents indicating their perceived profitability. Of the 102 respondents, 81 (79.4%) designated they were profitable, and 18 (17.6%) reported not being profitable, indicating a skewness of 1.675.

Social support

Parasuraman et al.'s (1992) social support scale was used to examine sources of social support used in reducing WFC. Providing emotional, instrumental, appraisal, and informational support, this research clustered social support into spousal support, familial support, and total familial/spousal social support (Parasuraman et al., 1992). Respondents were asked eight questions; four questions addressed the extent a spouse was willing to listen, was concerned about the business owner's welfare, provided helpful information, and praised the business owner's accomplishment. Four questions addressed the same social support criteria but sought information regarding the family's extent to provide support. Respondents answered using a Likert 5-point scale ranging from "almost none" to "a great deal."

Scores for spousal and family support could range from 4 to 20. Results from the combined spousal social support scores indicated $M = 15.35$ and $SD = 4.3$ with a skewness of -1.2, indicating a greater distribution of higher scores and thus greater perceived support. Results from the combined familial social support scores indicated $M = 13.62$ and $SD = 4.03$ with a skewness of -.45. A further description of the social support indicated that instrumental support was the most perceived support provided to owners with $M = 8.36$ and $SD = 1.94$ and appraisal support was the least provided at $M = 6.19$ and $SD = 2.22$. The composite social support mean was 28.97, $SD = 7.35$, and skewness of -.817. Table 3 provides descriptive statistics of support sources and types.

Table 5

Descriptive statistics for social support sources and types

	Spousal Support	Familial Support	Emotional Support	Instrumental Support	Appraisal Support	Informational Support
Mean	15.3529	13.6176	7.5490	8.3627	6.1863	6.9020
Std. Deviation	4.29977	4.03461	2.06636	1.93861	2.22377	2.28430
Variance	18.488	16.278	4.270	3.758	4.945	5.218
Skewness	-1.230	-.450	-.981	-1.318	-.195	-.538
Std. Error of Skewness	.239	.239	.239	.239	.239	.239
Kurtosis	.873	-.315	.744	1.529	-.532	-.384
Std. Error of Kurtosis	.474	.474	.474	.474	.474	.474
Minimum	4.00	4.00	2.00	2.00	2.00	2.00
Maximum	20.00	20.00	10.00	10.00	10.00	10.00

Work-family integration-blurring

The Work-Family Integration-Blurring Scale of Desrochers et al. (2005) was used to evaluate the integration of work and family roles. This four-question assessment allowed participants to compare the separation or integration of work and family domains. Responses from a 5-point Likert scale were combined to form a composite score, reverse coding the final question due to its transposed wording. Scores could range from 4 to 20. Results indicated $M = 13.47$ with a $SD = 3.75$, with results only slightly skewed at $-.166$ (Table 2).

Work-family conflict

Carlson et al.'s (2000) WFC survey was utilized to assess time-based and strain-based conflict. Time-based conflict results in the inability to complete obligations and requirements of a role due to the time devoted to other domains and the conflict, which may ensue when an individual was physically present in one domain but mentally preoccupied with the other (Greenhaus & Beutell, 1985; van Daalen et al., 2006). Strain-based conflict resulted when the role in one domain spilled over and made it difficult to fulfill requirements or function effectively in the other role (Greenhaus & Beutell, 1985).

Nine time-based family interference with work questions and nine strain-based family interference with work questions were included in this research. Participants responded using a 5-point Likert scale ranging from “strongly disagree” to “strongly agree.” Scores from time-based and strain-based WFC could range from 9 to 45 while total WFC could range from 18 to 90. Results indicated greater time-based WFC ($M = 20.48, SD = 6.21$) than strain-based WFC ($M = 18.96, SD = 7.00$).

In four of the sub-questions (one time-based strain WFC sub-response and three strain-based WFC sub-responses) blank responses were found. In each of these cases, the missing data were replaced with the mean for all the cases within the sub-category question. This allowed respondents’ responses to be analyzed without allowing the missing data to alter significantly the response effect or the usefulness of data. After the missing data were replaced, time-based WFC was calculated with $M = 20.54$ and $SD = 6.21$ and strain-based WFC was calculated with $M = 18.98, SD = 6.99$. The composite total mean for WFC was $39.52, SD = 12.28$. Table 4 provides additional descriptive statistics for WFC types.

Table 6
Descriptive statistics for WFC types

	Time WFC	Strain WFC	Total WFC
N Valid	102	102	102
Missing	0	0	0
Mean	20.5392	18.9804	39.5196
Std. Deviation	6.21348	6.94958	12.27630
Variance	38.607	48.297	150.708
Skewness	.551	.649	.644
Std. Error of Skewness	.239	.239	.239
Kurtosis	1.686	.247	1.154
Std. Error of Kurtosis	.474	.474	.474
Range	36.00	30.00	63.00

Assumptions of inferential statistics

Regarding this data, inferential statistical assumptions for a standard multiple and binary logistical regressions were evaluated. Predictor variables were categorical and the outcome variable was continuous and unbounded. All of the variables had variances greater than 0 (familial/spousal social support was 53.99, work-family integration/blurring was 14.05, WFC was 150.71, and transformed longevity was .147); however, perceived profitability had a variance of only .150. Three predictor variables were significantly correlated with one another, with r values including $-.187, .278,$ and $.319$; however, multicollinearity appeared not to be violated as none of the variables were highly correlated and no perfect linear relationship occurred between predictor variables (Kerlinger & Pedhazur, 1973; Tabachnick & Fidell, 2007). Collinearity occurs when explanatory variables are

highly correlated and can inflate standard errors of the logistic regression coefficients (Tabachnick & Fidell, 2007).

Table 5 provides a collinearity diagnostic analysis conducted on longevity, familial/spousal social support, work-family integration/blurring, and WFC. The collinearity diagnostic analysis indicated similar eigenvalues, which are likely to indicate that small changes in the measured variables would likely not change the results; however, there was a significant difference between the eigenvalue for dimension 1 and dimensions 2 through 4, which may indicate a collinearity problem. Normality was also evaluated through an examination of histograms with distribution curves. Most frequency plots had non-normal distributions; longevity was skewed 2.43, transformed longevity was skewed .329, perceived profitability was skewed 1.68, familial/social support was skewed -.82, work-family integration/blurring was skewed -.17, and WFC was skewed .64.

Table 7
Collinearity diagnostic

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Total Support	Integration Blurring	Total WFC	
1	1	3.850	1.000	.00	.00	.00	.00	
	dimension1	2	.088	6.610	.00	.24	.00	.46
		3	.042	9.580	.09	.08	.99	.10
		4	.020	13.989	.91	.67	.01	.43

Note. Dependent Variable: Years_log10

Assumptions of the binary logistic regression were also analyzed. Linearity was of concern with this type of analysis because a categorical outcome violates a linear relationship assumption (Kerlinger & Pedhazur, 1973). In order to determine if assumptions of linearity of the logit were violated, significance values were evaluated. As indicated within Table 11 as well as within the discussion of the second research question, all significance values were greater than .05 indicating that the assumption of linearity of the logit was met (Field, 2009). Also to guard against independence of errors and multicollinearity (Field, 2009), scores were captured from different respondents during one distinct period and predictor values did not highly correlate.

RQ 1: What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business longevity?

The analysis for research question one dictated that a multiple regression analysis be conducted using the explanatory or predictor variables of familial/spousal social support, work-family integration/blurring, and WFC with the outcome response variable of longevity. The purpose of the regression model analysis was to examine the relationship between the outcome variable of longevity and explanatory variables as well as develop a model to predict outcomes based on this set of predictor variables. Multiple regression analysis was also conducted to understand which factor was the strongest predictor variable.

Using an analysis of individual probability-probability (PP) plots with each predictor variable and the dependent variable of transformed longevity, all charts appeared to indicate a flat relationship between variables. Despite this finding, utilizing a linear multiple regression analysis, each of the predictor variables were entered simultaneously. Table 6 displays the correlations between variables, the unstandardized regression coefficients (*B*) and the intercept, the standardized regression coefficients (β), R^2 , and adjusted R^2 . *R* for this regression was not significantly different from zero, $F(3, 98) = .616, p > .05$. The strongest correlation between longevity and composite predictor factors was with familial/spousal social support ($r = .134$); however, with $p = .178$, there is a nearly 18% chance that there was not a relationship between these two variables and the correlation was purely by chance.

Table 8

Standard multiple regression of familial/spousal social support, work-family integration/blurring, and WFC on transformed longevity

Variables	Longevity (log) (DV)	Social Support	Blurring	WFC	<i>B</i>	β
Social Support	.134				.007	.126
Blurring	.054	.278**			.002	.023
WFC	-.029	-.187	.319**		.000	-.013
Means	.791	28.971	13.471	39.520	Intercept = .584, $p = .01$	
<i>SD</i>	.3831	7.348	3.749	12.276	$R = .136$	
					$R^2 = .019$	
					Adjusted $R^2 = -.012, p > .05$	

Note. ** $p < .01$

Additionally, Table 7 provides the model summary for the multiple regression of longevity with familial/spousal social support, work-family integration/blurring, and WFC. With $R = .136$, the value of the predictor values non-significantly predicted longevity as an outcome. A R^2 score of .019 indicated a weak positive correlation and a low variability in the outcome, based on these predictors; predictor values accounted for only 1.9% of the variation in longevity. The R^2 value revealed that approximately 1.9% of the variance between variables could be attributed to the relationship between longevity and predictor variables.

Table 9

Regression model for operation transformed longevity and familial/spousal support, work-family integration/blurring, and WFC

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics					
					R ² Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.136	.019	-.012	.38527	.019	.616	3	98	.606	2.157

Note. Predictors: (Constant), Total WFC, Total Support, Integration Blurring. Dependent Variable: Years Transformed

Partial correlations were also conducted to determine if longevity could be predicted by one predictor variable, controlling separately for the other two predictor variables. None of the partial correlations yielded any significant findings. While familial/spousal social support, work-family integration/blurring, and WFC totals did not adequately predict longevity, distinct sub-survey items slightly correlated with longevity. Even though this detailed research was not overtly dictated by proposed research questions, further analysis was conducted to more clearly understand if relational elements did occur between micro predictive elements and outcome variables. Table 8 details the questions that indicated the highest correlations. On the work-family integration/blurring survey, question 3 showed the strongest correlation ($r = .202$, $r^2 = .041$, $p < .05$) and asked, “I tend to integrate my work and family duties at work.” These results revealed a weak positive correlation with a high significance level and indicated that approximately 4.1% of the variance between question 3 of the work-family integration/blurring scale and longevity could be attributed to the relationship between these variables.

Table 10

Highest correlations of survey questions with transformed longevity

Questions	Scale	Correlation (r)	Significance (p)
2. To what extent are your family/children willing to listen to your work problems?	Social Support – family/emotional	.169	.091
3. To what extent is your spouse concerned about your welfare?	Social Support – spouse/instrumental	.149	.137
3. I tend to integrate my work and family duties at work.	Work-Family Blurring/Integration	.204	.040

6. The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career.	WFC – Time-based	-.173	.081
8. Tension and anxiety from my nonwork life often extend into my job	WFC – Strain-based	.081	.419

Taking these five sub-items, which indicated the highest correlations with longevity, an additional multiple regression was conducted to see if these individual items predicted operational longevity. Tables 9 and 10 indicated the results of this analysis. This analysis indicated that when considering only these five sub-items, this model explained or predicted 16.9% of the variance in longevity. This model revealed $F(5,94) = 3.813$ with $p < .005$. Within this model, Beta standard coefficients indicated that work-family integration/blurring (question 3) “I tend to integrate my work and family duties at work” ($\beta = .226, p < .05$), time-based WFC (question 6) “The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career” ($\beta = -.325, p < .005$), and strain-based WFC (question 8) “Tension and anxiety from my nonwork life often extend into my job” ($\beta = .254, p = .052$) were the best predictors of small business longevity. Concerning multicollinearity, all VIF values ranged from 1.207 to 1.525, indicating that collinearity was not of concern. While total familial/spousal social support, total work-family integration/blurring, and total WFC did not predict longevity, these five sub-items within these predictor variables did explain part of the variance in longevity (16.3%).

Table 11
Multiple regression for significant sub-items

Model	R	R ²	Adjusted R Square	Std. Error of the Estimate
dimension0 1	.411 ^a	.169	.124	9.3959

Notes: Predictors: (Constant), 8. Strain-based WFC, 3. Social Support – spouse/instrumental, 2. Social Support family/emotional, 3. Work-Family Blurring/Integration, 6. Time-based WFC.

Table 12
Multiple regression coefficients

Model						Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Partial	Tolerance	VIF
(Constant)	.367	.199		1.844	.068					
Social Support question 2	.027	.033	.085	.825	.411	.135	.085	.078	.827	1.210
Social Support question 3	.053	.034	.160	1.554	.124	.161	.158	.146	.829	1.207
Integration/Blurring question 3	.072	.034	.226	2.130	.036	.215	.215	.200	.785	1.274
Time-based WFC question 6.	-.145	.045	-.352	-3.227	.002	-.171	-.316	-.303	.745	1.342
Strain-based WFC question 8	.091	.046	.229	1.971	.052	.098	.199	.185	.656	1.525

Note. Dependent Variable: years_log10

In order to determine if the model could be improved if non-predictive questions were removed, questions 2 and 3 of the social support scale were eliminated. When the model was analyzed with only the three best predictors of longevity (integration/blurring – question 3, time-based WFC – question 6, and strain-based WFC – question 8), $R = .35$ and adjusted $R^2 = .094$, $F(3,98) = 4.512$, $p = .005$. This indicated that the revised model could account for 9.6% in the variance of longevity. Within this model, results revealed work-family integration/blurring (question 3) “I tend to integrate my work and family duties at work” the beta standard coefficient, $\beta = .266$, $p < .05$ and time-based WFC (question 6) “The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career” $\beta = -.325$, $p < .005$. Despite these findings within micro survey elements, $H1_0$ was failed to be rejected as composite predictor values neglected to significantly predict longevity.

RQ 2 - What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business owner's perceived profitability?

An analysis of research question two allowed for the use of a binary logistic regression since the response of perceived profitability was based on only two categorical or dichotomous outcomes. Participants were asked if they perceived their small business as profitable and could response with "yes" or "no". This type of statistical analysis was employed to assess the relationship between predictor variables and owner perceived profitability. Overall results indicated that familial/spousal social support, work-family integration/blurring, and time-based and strain-based WFC could not significantly predict the likelihood of perceived profitability. In this analysis, all predictors were entered simultaneously into the model. The overall model correctly classified 81.8% of business owners' perceived profitability.

Table 11 revealed the *B* coefficients for familial/spousal social support (-.046), work-family integration/blurring (-.026), and WFC (.033) with all odds ratios close to 1, indicating virtually no change in the response variable resulting from each of the explanatory variables. The results revealed, however without significance, that regarding perceived profitability, the analysis would yield predicted odds of .955 for total support, .975 for work-family integration/blurring, and 1.033 for WFC. The Wald chi-square statistic measured the statistical significance of individual regression coefficients. The Wald statistics confirmed the estimates of the coefficients on the logistic regression were not significantly different from zero, authenticating that explanatory variables did not contribute to the prediction of perceived profitability. The results of this analysis revealed that none of the composite variables chosen as predictor variables had statistically significant effects ($p > .05$) on perceived profitability.

SOBIE 2014

Table 13

Binary logistic regression for familial/spousal social support, work-family integration/blurring, and WFC with perceived profitability

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Total Support	-.046	.037	1.553	1	.213	.955	.888	1.027
	Integration Blurring	-.026	.084	.094	1	.759	.975	.827	1.149
	Total WFC	.033	.023	2.001	1	.157	1.033	.987	1.082
	Constant	-1.232	1.457	.715	1	.398	.292		

Note. Variable(s) entered on step 1: Total Support, Integration Blurring, Total WFC.

Additional analyses revealed similar findings regarding the strength of the association between variables. Table 12 displays results of Cox and Snell R^2 , Nagelkerke R^2 , and -2Log Likelihood assessments. Cox and Snell R^2 indicated the maximum likelihood that the variables could explain the model. Results of the Cox and Snell R^2 regarding familial/spousal social support and WFC explained only 2.7% of this logistic model. Similarly, the model's strength of association, Nagelkerke R^2 ranges from 0 to 1 and attempts to also explain the variation of the dependent variable within the model. The Nagelkerke R^2 approximates the R^2 in an ordinary least square regression. Work-family integration/blurring had identical scores for Cox and Snell R^2 and Nagelkerke R^2 , indicating 0 or none of the variation in perceived profitability could be explained by integration/blurring. Results of the Nagelkerke R^2 regarding familial/spousal social support and WFC revealed only 4.4% of this logistic model could be explained based on these predictor variables and perceived profitability.

Table 14

Model summary for binary logistic regression

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
Social Support	91.179 ^a	.027	.044
Work-family Integration/ Blurring	93.860 ^a	.000	.000
WFC	91.150 ^a	.027	.044

Note. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Results of the Hosmer-Lemeshow goodness-of-fit statistic are outlined in Table 13. The Hosmer-Lemeshow test divided participants into order groups and compared what was observed in the group to what was expected in the logistic model. This goodness-of-fit assessed the relationship between observed and predicted perceived profitability. Results from the Hosmer-Lemeshow analysis indicated that since $p = 1$ (social support), $p = .313$ (integration/blurring), and $p = .288$ (WFC) are greater than .05, the model predicted values similar to those that were observed. The Hosmer-Lemeshow test yielded a total chi-square of 9.635 and was not significant ($p = .292$). Controlling for all other variables in this model, there was no significant relationship between composite familial/spousal social support, work-family integration/blurring, and composite WFC with regard to perceived profitability. Thus, H_{20} was failed to be rejected.

Table 15

Hosmer-Lemeshow test

Step	Chi-square	df	Sig.
Social Support	.440	8	1.000
Integration/ Blurring	8.225	7	.313
WFC	8.530	7	.228
Total	9.635	8	.292

Supplemental analysis

Several supplemental analyses were also performed. The most significant correlations of this analysis were between predictor variables of work-family integration/blurring and total familial/spousal social support ($r = .278, p = .005, r^2 = .077$) and work-family integration/blurring and total WFC ($r = .319, p = .001, r^2 = .102$). These results revealed a weak positive correlation with a high significance level and indicated that approximately 7.7% of the variance between work-family integration/blurring and total familial/spousal social support could be attributed to the relationship. Additionally, 10.2% of the variance in work-family integration/blurring and total WFC could be attributed to the relationship.

Examining correlations between micro-elements and outcome variables were conducted to determine if sub-elements were connected to small business longevity and perceived profitability. Multiple regression and binary logistic regressions were conducted on micro-elements that exhibited significant correlations. Additionally, the associations between variables were also analyzed to determine the relationship between these criterion variables.

Because no significant findings were found between composite explanatory variables and response variables of business longevity and perceived profitability, this researcher conducted a multiple regression analysis using WFC as a dependent variable and total familial/spousal social support ($\beta = -.298$) and work-family integration/blurring ($\beta = .402$) as predictor variables. Results revealed an $R = .429$ and $R^2 = .184$ ($\Delta R^2 = .168, p < .000$). Based on this sample, total familial/spousal social support and work-family integration/blurring accounted for 18.4% of the variance in WFC.

Additionally, similar to van Daalen et al.'s (2006) findings, familial and spousal social support variables did not explain a significant portion of the variability associated with sub-scales of time-based conflict ($\Delta R^2 = .031, p = .077$) and strain-based conflict ($\Delta R^2 = .037, p = .059$). However, when the model was modified to compare familial social support and work-family integration/blurring with total (time-based and strain-based) WFC, variables did explain a significant portion of the variability in WFC. After controlling for other variables, familial social support ($\beta = -.363$) and work-family integration/blurring ($\beta = .425$) explained 20.7% of the variance ($R = .471, \Delta R^2 = .207, p < .001$) in total WFC.

While the three explanatory variables in this research model failed to predict the hypothesized response, an additional binary logistic regression was conducted on individual survey questions for familial/spousal social support, work-family integration/blurring, as well as time-based and strain-based WFC to determine if micro-elements within each survey could predict profitability. When entering sub-questions for each particular explanatory variable, significant findings were not revealed in any of the predictor variables except for strain-based WFC. The nine strain-based WFC questions focused on the effects of interfering demands, family stress influencing work performance, and family obligations influencing work goals. Item 7, which stated "Because I am often stressed from family

responsibilities, I have a hard time concentrating on my work” indicated an odds ratio = 19.09, $p = .011$, Wald = 6.43. This finding suggested when owners felt their family responsibilities created tension at work, they were less likely to perceived their business as profitable (Table 14).

Table 16

Binary logistic regression for strain-based WFC with perceived profitability

	B	S.E.	Wald	Sig.	Exp(B)
1. I'm often too tired at work because of the things I have to do at home.	.765	.490	2.440	.118	2.150
2. My personal demands are so great that it takes away from my work.	.174	.708	.060	.806	1.190
3. My family life often interferes with my responsibilities at work	-.656	.843	.606	.436	.519
4. Due to stress at home, I am often preoccupied with family matters at work.	-.682	.737	.857	.354	.506
5. The stress from my family life interferes with my work life.	-.744	.958	.603	.438	.475
6. I feel rushed at work so that I can go home to my family.	-.804	.519	2.399	.121	.447
7. Because I am often stressed from family responsibilities, I have a hard time concentrating on my work.	2.949	1.163	6.433	.011	19.093
8. Tension and anxiety from my nonwork life often extend into my job.	-1.250	.836	2.238	.135	.286
9. Due to all the pressures at home, sometimes it is hard for me to do my job well.	1.043	.941	1.230	.267	2.839
Constant	-3.054	1.074	8.091	.004	.047

Evaluation of Findings

Within this sample population, the average longevity of a business was slightly over eight years, confirming that most small businesses are young in their years of operation. Considering longevity, 58% of this population (59 businesses) had only been operating for five years or less while 6.8% of this population (7 businesses) had been operational 25 years or more. A significant percentage, 79.4% of the business owners (81 businesses) indicated that their business was profitable. Discovering a significant percentage of small business owners considering their business to be profitable was unexpected. Although high yields and solid profit margins are the desire of most small business owners (Gorgievski et al., 2011), half of all new business ventures are expected to close within their first five years of operation (Knaup & Piazza, 2007). With a high failure rate, finding a significant majority of business owners who perceived their business as profitable was unforeseen.

Perceived profitability may have been elevated due to the sample of small business owners who sought services through their local SBDC and because profitability was individually interpreted rather than measured by a standard criterion.

Regarding total familial/spousal social support, respondents indicated $M = 28.96$ out of a possible 40. Spousal support ($M = 15.35$) was greater than familial support ($M = 13.62$); instrumental support ($M = 8.36$) was the most significant type of support while appraisal support ($M = 6.19$) was the least. These findings were expected and consistent with Leaptrott (2009), Werbel and Danes (2010), and van Daalen et al. (2006) who suggested that small business owners often sought significant supportive resources from their spouses and family members. Additional findings from this research revealed an inverse predictive relationship between social support and WFC. These findings were consistent with COR theorists who suggested an increase of conflict and stress when individuals experienced support resource deficiencies (Hobfoll, 2001).

Regarding work-family integration/blurring, this population reported $M = 13.47$ out of a possible 20. This indicated that most of these business owners integrated and blurred their work and life responsibilities. Additional results from this research indicated a positive predictive relationship between work-family integration/blurring and WFC. Results confirmed Halbesleben et al.'s (2010) and Odle-Dusseau et al.'s (2012) findings and corroborated COR theorists by suggesting role integration increased WFC but also allowed for easier and repeated resource support and transmissions between domains. In addition, business owners in this research tended to integrate their work and family responsibilities at work more than at home. This role integration of work and home appeared to foster more time-based and strain-based work-family conflict, validating boundary theory, as well as Matthews, Barnes-Farrell, & Bulger (2010) and Winkel and Clayton (2010), who proposed that individuals experienced increased WFC when work and family roles are blurred, and established the strongest boundary in order to protect their most valuable domain.

Also within this research, time-based conflicts were more indicated ($M = 20.54$) than strain-based conflicts ($M = 18.98$). Similar to van Daalen et al. (2006), this research revealed social support did not solely explain a significant portion of the variability associated with time-based and strain-based WFC. However, as stated previously, this research did reveal WFC increased when family support decreased and work-family blurring/integration increased. This may indicate that when domains are integrated and when owners fail to receive support resources, the chance for amplified conflict between roles increases.

Findings from this study also indicated that small business longevity ($R = .136$, $R^2 = .019$, $p > .05$) and owner perceived profitability ($B = -1.232$, $p > .05$) could not be significantly predicted by composite familial/spousal social support, work-family integration/blurring, and composite time-based and strain-based WFC. The lack of a strong predictive relationship between variables was unexpected because much of the literature (Breaugh & Frye, 2008; Carlson et al., 2009; Mitchelson, 2009; Zhang & Lui, 2011), as well as COR theory (Hobfoll, 2001), JD-R model (Bakker, Brummelhuis, Prins, & van der Heijden, 2011), and social capital theory (Seiger & Wiese, 2009) pointed to the connection between work-life balance and productivity. However, further investigation

within this research showed that micro work-life balance elements could slightly, yet significantly, predict longevity.

Results in this research were considered statistically significant if significance levels were less than .05 in order to justify the importance of familial/spousal social support, work-family integration/blurring, and WFC as predictive variables to longevity and perceived profitability. While this research failed to reject $H1_0$ and $H2_0$, correlations were found between variables and 16.9% of the variance in longevity was found in sub-questions within the surveys. Findings revealed a medium correlation effect between work-family integration/blurring and total WFC, as well as work-family integration/blurring with total familial/spousal social support. Additionally, family obligations, which resulted in work place stress, did appear to influence profitability perceptions. Because composite findings did not indicate significant confidence levels yet microelements revealed significances, future research should seek to understand more clearly the associations between these variables.

Implications

Results from this study revealed that with a small business population, perceived profitability and longevity cannot be significantly predicted by familial/spousal social support, work-family integration/blurring, and WFC; however, connections were present between business sustainability and work-life balance factors.

Social support

This study presented valuable insights into the benefits of social support within the work environment. Social support was assessed to determine both the source of support (family members and spouses) as well as types of support (emotional, instrumental, appraisal, and informational). Overall, this sample indicated the frequent receipt of supportive resources considering types and sources. Spouses ($M = 15.35$) were perceived as providing more support than family members provide ($M = 13.62$). Additionally, types of social support ranked in order of their perceived supplied resource included instrumental ($M = 8.36$), emotional ($M = 7.55$), information ($M = 6.90$), and appraisal ($M = 6.19$). Instrumental support involved providing time, money, resources, responsibility, and energy to the business. Emotional support included the perception of empathy, care, concern, and trust for the owner and the business. Informational support encompassed advice, insights, and suggestions for business operation and growth. Finally, appraisal support comprised assessment, consideration, approval, and opinion. Each of these support types were essential in reducing WFC and increasing work-life balance (van Daalen et al., 2006). While composite support and individual support types could not predict longevity or perceived profitability, based on research findings, small business owners acknowledged time, money, and energy (instrumental resources) provided within their business by spouse and family members were the most perceived support.

Work-family integration/blurring

Within this sample, business owners tended to integrate their work and their personal lives. Of the respondents, an average of 67.35% indicated they had difficulty delineating between where their work life ended and their personal life began. As a probable motivational factor in starting a business, the ability to have more control over work and personal roles and the ability to integrate work and family responsibilities are a significant characteristic of small business ownership (Gorgievski et al., 2011). Even though relational sacrifices are commonly found within business ownership (Kozan, Oksoy, & Ozsoy, 2011), the desire for flexibility in work schedules, control over workload (Hilbrecht et al., 2008), and integration between work and family roles appears to be typical characteristics of business owners.

Extending Halbesleben et al.'s (2010) findings that suggested role integration and spousal instrumental support reduced emotional exhaustion, as well as COR theorists who suggested cross-domain support and integration improved success in both domains (Ode-Dusseau et al., 2012), the highly integrated work and family roles of business owners may allow for easier and repeated resource support and transmissions between domains. When boundaries are permeable, domains can become blurred. Winkel and Clayton (2010) suggested that when boundaries are permeable, individuals who have less control over work demand increases often experience increased WFC. While small business owners have notably greater control over their work environment, they often do not have the employee resources available that other individuals who work in mid-size or large businesses. Thus, business owners often appear to juggle multiple tasks and integrate their roles. Halbesleben et al. (2010) alternatively suggested that role integration and permeable boundaries facilitated trans-role support and assistance. Within this research, business owners presented as integrators of work and family roles. This integration of work and family roles indicated a slight increase in WFC; however, spousal support and familial support may be acting as mitigating resources reducing the feelings of time-based and strain-based conflict.

WFC

Also within this sample time-based WFC ($M = 20.54$) was more predominant than strain-based WFC ($M = 18.98$). While limited findings were revealed between composite predictor variables and outcome variables of longevity and perceived profitability, further investigation revealed an inverse predictive relationship between familial/spousal social support and WFC and a positive predictive relationship between work-family integration/blurring and WFC. This may be the result of family members and spouses who provide resources, time, energy, encouragement, and information to business owners, which may diminish or negate any guilty or stressful feelings felt by owners when work responsibilities take them away from their families. Additionally, when work and family roles are blurred, the opportunity for increased interference, stress, and tension increases.

Additionally, business owners in this research tended to integrate their work and family responsibilities at work more than they integrated work and family responsibilities at home. This blurring of roles in their work environment appears to foster more time-based and strain-based work-family conflict, and may validate Winkel and Clayton's (2010) premise that individuals establish the strongest boundary in order to protect their most valuable domain. Because this research study focused on time and strain conflict from family members interfering with work, working on family

obligations at work was a flexible benefit for business owners but resulted in tension between roles, negative work productivity, and emotional exhaustion.

Although not directly related to the two established research questions regarding work-family integration/blurring, findings from this research indicated composite familial/spousal social support and work-family integration/blurring did predict WFC (18.4%). Similar to previous research (van Daalen et al., 2006), social support did not solely explain a significant portion of the variability associated with time-based and strain-based WFC. However, this research did reveal that as family support decreased and work-family blurring/integration increased, WFC increased. This may indicate that when domains are blurred and when owners fail to receive supportive resources, the chance for increased conflict between roles increases.

Research question 1: What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business longevity?

Extensive previous research (Breugh & Frye, 2008; Carlson et al., 2009; Mitchelson, 2009; Zhang & Lui, 2011) had established the caustic effect of increased WFC and poor work-life balance on decreasing work performance and productivity. However, findings from this study did not find an explanatory or predictor relationship between composite variables of familial/spousal social support, work-family integration/blurring, and WFC with the response variable of longevity. This may be explained by the varied and complex factors, which affect the business owners' ability to sustain and develop their business as well as the individual nuances held within each of these explanatory variables. While composite variables could not explain the variance in longevity, individual items within each survey did predict longevity.

Further investigation revealed that work-family integration/blurring (question 3) "I tend to integrate my work and family duties at work" and strain-based WFC (question 8) "Tension and anxiety from my nonwork life often extend into my job" positively predicted small business longevity. Additionally, time-based WFC (question 6) "The time I spend with my family often causes me to not spend time in activities at work that could be helpful to my career" inversely predicted small business longevity. However, these three items predicted only a weak, but significant relationship with operational longevity (9.6%). In the first two sub-items, the effects of fitting family responsibilities into a work domain allowed the business owner to capitalize on the flexibility offered with business ownership and work-load control afforded when an individual had influence over work demands and schedules. In the time-based WFC item, findings revealed that when the business owner sacrificed work obligations for family responsibilities, the business, specifically the operational longevity of the business, was negatively affected.

Research question 2: What is the predictive relationship of familial/spousal social support, work-family integration/blurring, and WFC on small business owner's perceived profitability?

Overall findings regarding the second research question indicated that composite familial/spousal social support, work-family integration/blurring, and composite WFC could not significantly predict the likelihood of perceived profitability. Even a detailed investigation of the individual items within each survey could not significantly predict small business profitability. Within this sample, a significant majority, over 79%, of the business owners indicated that they perceived their business to be profitable. Using small businesses registered within the SBDC may have distorted this dynamic. Because the goal of the SBDC is to promote business development and expansion, this population may perceive itself more profitable than small business owners not receiving benefits or services. Because so many of the business owners already perceive themselves as profitable, trends could not be established regarding perceived profitability based on other explanatory variables.

Only small correlations were found between profitability and time-based WFC (question 7), which asked, "I feel guilty for spending time with my family when I know I should be concentrating on work" ($r = .277, p < .05$) and between profitability and strain-based WFC (question 1), which asked, "I'm often too tired at work because of the things I have to do at home" ($r = .283, p = .005$). Both of these questions addressed (a) the stress and tension felt by the business owner when focusing on family responsibilities, (b) the exhaustion, which can result from balancing work and family responsibilities, and (c) the effects work-life strain has on work productivity. Although correlations appeared to indicate only slight associations, faint connections did exist between work-life balance elements and productivity, measured by small business owner perceived profitability.

Limitations

This study had limitations that may have influenced findings. While the sample size was adequate, the sample was significantly skewed toward owners who had not been in business long-term and who perceived their business profitable. This truncated results, making it difficult to establish trends between longevity and perceived profitability with other explanatory variables. Because of the non-normality of longevity, longevity data were transposed using the log10 method.

In addition, the concept of perceived profitability also presented limitations within this study. Profitability is a significant factor to true small business growth, but was difficult to compare across different industries and different size businesses. Reliance of such a critical factor based on one question was problematic. The decision to ask one question regarding perceived profitability was predicated on valuing the limited time available to business owners and the standardization of this variable across multiple businesses. Having additional survey questions that addressed other aspects of profitability would have provided a more complete picture of this dynamic. Additional questions such as "Have your sales increased over the last year," "Is your business growing," and "Does your business provide you with a sustainable wage" could be asked to respondents. This would allow the scores from multiple profitability questions to be combined, creating a composite profitability variable.

In addition, the two outcome variables of longevity and perceived profitability used in this

research may have inadequately addressed the concept of business owner productivity. Since the business owner's responsibilities are diverse and extensive, quantifying their productivity was problematic. Expanding outcome variables to address other productivity factors may provide a clear description of the relationship between work-life balance and small business sustainability. In addition, while spousal/familial support, work-family integration/blurring, and WFC were found to be substantial factors within an individual's work-life balance dynamic, there may be other variables that help better explain work-life balance factors.

Recommendations

This research corroborated the connection felt between work and nonwork roles and addressed work-life balance issues within a new population, small business ownership. Small business ownership is a consuming enterprise, requiring extensive sacrifices yet offering flexibility, individual control, and singular power. Making up the majority of the U.S workforce, small businesses produce 50% of the private sector gross domestic product (Chow & Dunkelberg, 2011). Small business owners are recognized for their persistent maintenance of business operations (Geho, Smith, & Lewis, 2010). Small business ownership can be a demanding endeavor; success demands knowledge, fortitude, as well as personal, financial, and relational sacrifices (Kozan et al., 2011). Because small business sustainment is tied to performance, small businesses must seek strategic measures to improve their competitive advantage (Latham, 2008).

For small business owners to be successful, extensive and varied relational and personal sacrifices must be made in order to prevent business failure or stagnation (Kozan et al., 2011). Time lost with spouses and family members, inadequate leisure activities, and increased workload are common indicators of owner sacrifice and are significant indicators of entrepreneurial growth (Kozan et al., 2011). Small business owners need to assess adequately their supportive resources including emotional, instrumental, appraisal, and information support received from spouses and family members as they initiate and develop their business. While this support may not strongly predict business longevity or perceived profitability, this social support was evident in all small business ownership and did abate family interference with work conflict. This dynamic, supported by Matthews, Bulger, & Barners-Farrell, (2010), was revealed within this research, which indicated an inverse correlation between support and WFC. Findings from this research confirmed DiRenzo, Greenhaus, & Weer (2011), Hecht & Boies (2009), and Matthew, Bulger, et al. (2010) research by suggesting when individuals perceive their family as supportive and encouraging of their work, they are less likely to suffer with WFC.

Business owners must acknowledge that while workload controls allowed domains to be integrated, work-family integration can result in cross-domain support as well as fatigue and increased time-based and strain-based conflict (Breugh & Frye, 2008). Owners must be aware that work-life imbalance may decrease work productivity (Powell & Greenhaus, 2010); therefore, sensible boundaries must be established to ensure continued work and family satisfaction, family wellbeing, and business sustainability. Owners and entrepreneurs who learn to balance the conflicting demands between family and business will perform more effectively in both roles (Leaptrott, 2009). Carlson et al.'s (2009) research concurred by suggesting effective work-life balance develops when an individual maintains mutually agreed upon role requirements, meets essential domain responsibilities,

and releases extreme rigorousness that demands perfection in all domains.

Whether formally discussed as a part of small business coaching or informally considered in familial or spousal conversations, the establishment of work-life balance boundaries and the impact of relational sacrifices, which result from small business ownership should be discussed prior to starting a small business venture and revisited periodically based on changes in work or family dynamics. While composite familial/spousal social support, work-family integration/blurring, and WFC may not be primary indicators of small business longevity and perceived profitability, their subtle effects on the undertones of these outcome variables should not be ignored. Micro-elements within each of the explanatory variables point to the connections between small business success and the effects of social support, integration, and WFC. Essential to the business incubation and development process should be the consideration of work-life balance dynamics. Business owners must be made aware, whether intentionally or unintentionally, of the boundaries established between domains, the effect of supportive resources, the benefits and disadvantages of work and family integration, and the implications of WFC.

Future research

Future research should seek to determine additional measures of productivity to evaluate the effects of work-life balance such as sales growth or employee expansion. Furthermore, this study limited WFC by focusing on family interference with work; additional studies should focus on work interference with family within the small business culture. Exploring the effects of work-life balance on business owner family wellbeing and satisfaction will provide greater depth of understanding to the work-life balance process.

Future studies should also examined the effects of working hours on productivity and well-being. Work hours and workload may present as additional sustainable factors influencing small business success. Additionally, the role that gender, spousal/family member employment within the business, and industry classification differences have on work-life balance issues within a small business population is also a recommended area of future research.

While this research focused on business owners, who extensively perceived their profitability, additional research should be conducted on a population who do not perceive their businesses as profitable. Concentrating on small businesses that have failed or are languishing to determine the function work-life balance issues plays in the business struggle or closure would be an area of needed investigation. Finally, a qualitative exploration of work-life balance subtleties including the effects of social support, work-family integration, and WFC would provide further validity to this influence.

Conclusions

Previous research suggested that work-life balance dynamics including social support, work-family blurring, and WFC affected employee productivity (Breugh & Frye, 2008; Carlson et al., 2009; Mitchelson, 2009; Zhang & Lui, 2011). Although substantial findings were not revealed within the research, subtle yet meaningful findings shed light on the impact of work-life balance dynamics on small business success. Trends in social support, work-family integration/blurring, and WFC could not significantly predict outcome variables but were evident in all small business ownership. The establishment of work-life balance boundaries and the impact of relational sacrifices, which result from small business ownership should be discussed prior to starting a small business venture and revisited periodically based on changes in work or family dynamics. Additionally, business owners should acknowledge that work-family integration could result in cross-domain support as well as increased WFC. Sensible boundaries should be established in order to ensure work and family satisfaction and business sustainability. Acknowledgment of the interface between work and family with small business and entrepreneurial ventures was a factor of sustainability and should be the focus of continued research.

References

- Al-Qutop, M. Y., & Harrim, H. (2011). Quality of worklife human well-being linkage: Integrated conceptual framework. *International Journal of Business and Management*, 6(8), 193-205. doi:10.5539/ijbm.v6n8p193
- Bakker, A. B., Brummelhuis, L. L., Prins, J. T., & van der Heijden, F. M. (2011). Applying the job demands-resources model to the work-home interface: A study among medical residents and their partners. *Journal of Vocational Behavior*, 79(1), 170-180. doi:10.1016/j.jvb.2010.12.004
- Breaugh, J. A., & Frye, N. K. (2008). Work-family conflict: The importance of family-friendly employment practices and family-supportive supervisors. *Journal of Business Psychology*, 22(4), 345-353. doi:10.1007/s10869-008-9081-1
- Carifio, J., & Perla, R. J. (2007). Ten common misunderstandings, misconceptions, persistent myths and urban legends about likert scale and likert response formats and their antidotes. *Journal of Social Science*, 3, 106-116. doi:10.3844/jssp.2007.106.116
- Carlson, D. S., Grzywacz, J. G., & Zivnuska, S. (2009). Is work-family balance more than conflict and enrichment? *Human Relations*, 62(10), 1459-1479. doi:10.1177/0018726709336500
- Carlson, D. S., Kacmar, K. M., & Williams, L. J. (2000). Construction and initial validation of a multidimensional measure of work-family conflict. *Journal of Vocational Behavior*, 56(2), 249-276. doi:10.1006/jvbe.1999.1713
- Chang, A., McDonald, P., & Burton, P. (2010). Methodological choices in work-life balance research 1987-2006: a critical review. *The International Journal of Human Resource Management*, 21(13), 2381-2413. doi:10.1080/09585192.2010.516592
- Chow, M. J., & Dunkelberg, W. C. (2011). The small business sector in recent recoveries. *Business Economics*, 46(4), 214-228. doi:10.1057/be.2011.23
- Clark, S.C. (2000). Work/family border theory: A new theory of work/family balance. *Human Relations*, 53(6), 747-770. doi:10.1177/0018726700536001

- Cronin-Gilmore, J. (2012). Exploring marketing strategies in small businesses. *Journal of Marketing Development and Competitiveness*, 6(1), 96-107. Retrieved from <http://www.na-businesspress.com/jmdcopen.html>
- Demerouti, E. (2012). The spillover and crossover of resources among partners: The role of work-self and family-self facilitation. *Journal of Occupational Health Psychology*, 17(2), 184-195. doi:10.1037/a0026877
- Desrochers, S., Hilton, J. M., & Larwood, L. (2005). Preliminary validation of the work-family integration-blurring scale. *Journal of Family Issues*, 26(4), 442-466. doi:10.1177/0192513X04272438
- DiRenzo, M. S., Greenhaus, G. H., Weer, C. H. (2011). Job level, demands, and resources as antecedents of work-family conflict. *Journal of Vocational Behavior*, 78(2), 305-314. doi:10.1016/j.jvb.2010.10.002
- Engel, C. J., Bell, R. L., Meier, R. J., Martin, M. J., & Rumpel, J. H. (2011). Young consumers in the new marketing ecosystem: An analysis of their usage of interactive technologies. *Academy of Marketing Studies Journal*, 15(2), 23-44. Retrieved from <http://www.alliedacademies.org/Public/Journals/JournalDetails.aspx?jid=12>
- Field, A. (2009) *Discovering statistics using SPSS* (3rd ed.). Thousand Oaks, CA: SAGE Publishing.
- Geho, P. R., Smith, S., & Lewis, S. D. (2010). Is Twitter a viable commercial use platform for small businesses? An empirical study targeting two audiences in the small business community. *The Entrepreneurial Executive*, 15, 73-85. Retrieved from <http://www.alliedacademies.org/Public/Journals/JournalDetails.aspx?jid=9>
- Gorgievski, M. J., Ascalon, M., & Stephan, U. (2011). Small business owners' success criteria, a values approach to personal differences. *Journal of Small Business Management*, 49(2), 207-232. doi:10.1111/j.1540-627X.2011.00322.x
- Greenhaus, J. H., & Beutell, N. J. (1985). Sources of conflict between work and family roles. *Academy of Management Review*, 10, 76-88. Retrieved from <http://www.aomonline.org/>

- Greenhaus, J. H., & Powell, G. N. (2006). When work and family are allies: A theory of work-family enrichment. *Academy of Management Review*, *31*(1), 72-92. Retrieved from <http://www.aom.pace.edu/amr/>
- Gregory, A., & Milner, S. (2009). Editorial: Work-life balance: A matter of choice? *Gender, Work and Organization*, *16*(1), 1-13.
doi:10.1111/j.1468-0432.2008.00429.x
- Grzywacz, J., & Carlson, D. (2007). Conceptualizing work-family balance: Implications for practice and research. *Advances In Developing Human Resources*, *9*(4), 455-471.
doi:10.1177/1523422307305487
- Halbesleben, J. B. (2010). Spousal support and coping among married coworkers: Merging the transaction stress and Conservation of Resources models. *International Journal of Stress Management*, *17*(4), 384-406. doi:10.1037/a0020500
- Halbesleben, J. B., Harvey, J., & Bolino, M. C. (2009). Too engaged? A conservation of resources view of the relationship between work engagement and work interference with family. *Journal of Applied Psychology*, *94*(6), 1452-1465. doi:10.1037/a0017595
- Halbesleben, J. B., Zellars, K. L., Carlson, D. S., Perrewé, P. L., & Rotondo, D. (2010). The moderating effect of work-linked couple relationships and work-family integration on the spouse instrumental support-emotional exhaustion relationship. *Journal of Occupational Health Psychology*, *15*(4), 371-387.
doi:10.1037/a0020521
- Headd, B., & Kirchoff, B. (2009). The growth, decline and survival of small businesses: An exploratory study of life cycles. *Journal of Small Business Management*, *47*(4), 531-550.
doi:10.1111/j.1540-627X.2009.00282.x
- Hecht, T. D., & Boies, K. (2009). Structure and correlates of spillover from nonwork to work: An examination of nonwork activities, well-being, and work outcomes. *Journal of Occupational Health Psychology*, *14*(4), 414-426.
doi:10.1037/a0015981
- Hilbrecht, M., Shaw, S., Johnson, L., & Andrey, J. (2008). 'I'm home for the kids': Contradictory implications for work-life balance of teleworking mothers. *Gender, Work and Organization*, *15*(5), 454-476. doi:10.1111/j.1468-0432.2008.00413.x

- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513-524. doi:10.1037/0003-066X.44.3.513
- Hobfoll, S. E. (2001). The influence of culture, community, and the nested self in the stress process: Advancing conservation of resources theory. *Applied Psychology: An International Review*, 50(3), 337-370. Retrieved from [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1464-0597](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1464-0597)
- House, J. S. (1981). *Work stress and social support*. Reading, MA: Addison-Wesley.
- Kerlinger, F. N., & Pedhazur, E. J. (1973). *Multiple regression in behavioral research*. New York, NY: Holt, Rinehart, and Winston.
- Knaup, A., & C. Piazza, M. (2007). Business employment dynamics data: Survival and longevity, II. *Monthly Labor Review*, 130(9), 3-10. Retrieved from <http://www.bls.gov/opub/mlr/welcome.htm>
- Kozan, M. K., Oksoy, D., & Ozsoy, O. (2011). Owner sacrifice and small business growth. *Journal of World Business*. Online publication. doi:10.1016/j.jwb.2011.05.008
- Latham, J. R. (2008). Building bridges between researchers and practitioners: A collaborative approach to research in performance excellence. *The Quality Management Journal*, 15(1), 8-26. Retrieved from <http://asq.org/pub/qmj/>
- Lazar, I., Osoian, C., & Ratiu, P. (2010). The role of work-life balance practices in order to improve organizational performance. *European Research Studies*, 13(1), 201-213. Retrieved from <http://www.ersj.eu/>
- Leaptrott, J. (2009). The effect of work - family role conflict on business startup decision-making processes. *Journal of Behavioral Studies in Business*, 1, 1-17. Retrieved from <http://www.aabri.com/jbsb.html>
- Maertz, C. P., & Boyar, S. L. (2011). Work-family conflict, enrichment, and balance under "levels" and "episodes" approaches. *Journal of Management*, 37(1), 68-98. doi:10.1177.0149206310382455

- Matthews, R. A., Barnes-Farrell, J. L., & Bulger, C. A. (2010). Advancing measurement of work and family domain boundary characteristics. *Journal of Vocational Behavior, 77*, 447-460. doi:10.1016/j.jvb.2010.05.008
- Matthews, R. A., Bulger, C. A., & Barnes-Farrell, J. L. (2010). Work social supports, role stressors, and work-family conflict: The moderating effect of age. *Journal of Vocational Behavior, 76*, 78-90. doi:10.1016/j.jvb.2009.06.011
- Michel, J. S., Mitchelson, J. K., Kotrba, L. M., LeBreton, J. M., & Baltes, B. B. (2009). A comparative test of work-family conflict models and critical examination of work-family linkages. *Journal of Vocational Behavior, 74*, 199-218. doi:10.1016/j.jvb.2008.12.005
- Michel, J. S., Mitchelson, J. K., Pichler, S., & Cullen, K. L. (2010). Clarify relationships among work and family social support, stressors, and work-family conflict. *Journal of Vocational Behavior, 76*(1), 91-104. doi:10.1016/j.jvb.2009.05.007
- Mitchelson, J. K. (2009). Seeking the perfect balance: Perfectionism and work-family conflict. *Journal of Occupational & Organizational Psychology, 82*(2), 349-367. doi:10.1348/096317908X314874
- Moreno-Jiménez, B., Mayo, M., Sanz-Vergel, A., Geurts, S., Rodríguez-Muñoz, A., & Garrosa, E. (2009). Effects of work-family conflict on employees' well-being: The moderating role of recovery strategies. *Journal Of Occupational Health Psychology, 14*(4), 427-440. doi:10.1037/a0016739
- Neumark, D., Wall, B., & Zhang, J. (2011). Do small businesses create more jobs? New evidence from the United States from the National Establishment Time Series. *Review of Economics & Statistics, 93*(1), 16-29. doi:10.1162/REST_a_00060
- Odle-Dusseau, H. N., Britt, T. W., Greene-Shortridge, T. M. (2012). Organizational work-family resources as predictors of job performance and attitudes: The process of work-family conflict and enrichment. *Journal of Occupational Health Psychology, 17*(1), 28-40. doi:10.1037/a0026428

- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS* (4th ed.). Berkshire, England: McGraw Hill.
- Parasuraman, S., Greenhaus, J. H., & Granrose, C. S. (1992). Role stressors, social support, and well-being among two-career couples. *Journal of Organizational Behavior*, *13*(4), 339-339. Retrieved from [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1099-1379](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1099-1379).
- Powell, G. N., & Greenhaus, J. H. (2010). Sex, gender, and decisions at the family → Work interface. *Journal Of Management*, *36*(4), 1011-1039. doi:10.1177/0149206309350774
- Quick, J. D., Henley, A. B., & Quick, J. C. (2004). The balancing act – At work and at home. *Organizational Dynamics*, *33*(4), 426-438. doi:10.1016/j.orgdyn.2004.09.008
- Schneider, B., Macey, W H, Barbera, K M, & Martin, N. (2009). Driving customer satisfaction and financial success through employee engagement. *People & Strategy*, *32*(2), 22-28. Retrieved from <http://www.hrps.org/>
- Seiger, C. P., & Wiese, B. S. (2009). Social support from work and family domains as an antecedent or moderator of work-family conflicts? *Journal of Vocational Behavior*, *75*, 26-37. doi:10.1016/j.jvb.2009.03.001
- Small Business Administration (2012). Retrieved from <http://web.sba.gov/>
- Steinmetz, H., Frese, M., & Schmidt, P. (2008). A longitudinal panel study on antecedents and outcomes of work-home interference. *Journal of Vocational Behavior*, *73*(2), 231-241. doi:10.1016/j.jvb.2008.05.002
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson Education.
- ten Brummelhuis, L. L., & van der Lippe, T. (2010). Effective work-life balance support for various household structures. *Human Resource Management*, *49*(2), 173-193. doi:10.1002/hrm.20340

- van Daalen, G., Willemsen, T. M., & Sanders, K. (2006). Reducing work-family conflict through different sources of social support. (Report). *Journal of Vocational Behavior*, 69(3), 462-476. doi:10.1016/j.jvb.2006.07.005
- Werbel, J. D., & Danes, S. M. (2010). Work family conflict in new business ventures: The moderating effects of spousal commitment to the new business venture. *Journal of Small Business Management*, 48(3), 421-440. doi:10.1111/j.1540-627X.2010.00301.x
- Williams, D., & Jones, O. (2010). Factors associated with longevity of small, family-owned firms. *International Journal of Entrepreneurship*, 14, 37-57. Retrieved from <http://www.alliedacademies.org/Public/Journals/JournalDetails.aspx?jid=7>
- Winkel, D. E., & Clayton, R. W. (2010). Transitioning between work and family roles as a function of boundary flexibility and role salience. *Journal of Vocational Behavior*, 76(2), 336-343. doi:10.1016/j.jvb.2009.10.011
- Winship, C., & Mare, R. D. (1984). Regression models with ordinal variables*. *American Sociological Review*, 49, 512-525. Retrieved from http://www.asanet.org/journals/asr/american_sociological_review.cfm?CFID=9100968&CFTOKEN=33037383
- Zachary, R. K., & Mishra, C. S. (2010). Entrepreneurship research today and beyond: Hidden in plain sight!. *Journal of Small Business Management*, 48(4), 471-474. doi:10.1111/j.1540-627X.2010.00304.x
- Zhang, J., & Liu, Y. (2011). Antecedents of work-family conflict: Review and prospect. *International Journal of Business and Management*, 6(1), 89-103. Retrieved from <http://www.ijbmt.com/>
- Zikmund, W. G., Babin, B. J., Carr, J. C., & Griffin, M. (2010). *Business research methods* (8th ed.). Mason, OH: South-Western Cengage Learning.

Improving Shewhart Control Chart Performance Using Two-Stage Sampling

Kenneth W. Linna

Auburn University Montgomery, Montgomery, AL 36124

Abstract

The usual Shewhart control chart efficiently detects relatively large shifts in the mean of a quality characteristic and has been extensively studied in the literature. Most proposed alternatives to the Shewhart chart aim to improve either the signal performance at smaller mean shifts or reduce the sampling effort required to detect a larger shift. The use of two-stage sampling is considered here, whereby it is shown that both the average total sample size and the average run length are improved relative to the standard Shewhart control chart.

Introduction

The Shewhart control chart as presented in, e.g., Shewhart (1939) remains as perhaps the most widely employed and studied tool in statistical process control. In the simplest case, the Shewhart chart operates as a sequence of presumably independent tests of hypothesis concerning some parameter of interest. Generally, successive samples are obtained at intervals and checked against one or more control limits. Typically, in the so-called standards given case, the basic Shewhart chart for the process mean employs control limits as follows:

$$\mu \pm z_{\alpha/2} \sigma / \sqrt{n}.$$

In the preceding formula, μ is the assumed known (or desired) process mean, $z_{\alpha/2}$ is the upper $\alpha/2$ percentage point of the standard normal distribution, σ is the assumed known (desired) process standard deviation, n is the sample size, and α is the desired type I error rate. The upper and lower values resulting from the preceding are generally referred to as the upper and lower control limits, or UCL and LCL, respectively.

The chart is said to produce a signal when any plotted sample mean exceeds the control limits, effectively a rejection of the null hypothesis that the process mean is equal to the in-control value μ . Many proposed modifications to this basic construction involve varying the sample size, sampling interval, placement of the control limits, number of control limits, and application of myriad alternate rejection rules.

Most modern representations of the Shewhart chart divide chart operation into two distinct phases. In phase I, either a sequence of m subgroups of size n is obtained in order to establish initial process control, or process parameters are assumed known. Phase II operation is sustained process surveillance using the process parameters established during phase I. Phase II operation under the parameters known (or standards given) case is considered here.

Chart Performance Measures

The relative performance of proposed control chart schemes is generally evaluated using the average run length (ARL), or its equivalents, the signal probability or operating characteristic curves. The average run length is generally taken as the number of sampling intervals required to produce a signal. In the parameters given case, it is assumed that successive samples are independent, in which case the run length distribution is geometric with mean equal to the reciprocal of the signal probability. Therefore, chart performance is completely characterized by the mean, or average run length. Charts are typically evaluated in terms of the ARL performance associated with a sustained shift in the controlled parameter that it is desired to detect relatively quickly. For a fair comparison, competing charts should at once possess both the same average total sample size and the same in-control average run length. A signal is generated on the Shewhart means chart if the calculated value of the sample mean falls beyond either the upper or lower control limit. If it is assumed that the quality characteristic has a normal distribution, and that at some time t the mean of the process shifts to some value $\mu' = \mu + \delta\sigma$, then the probability of a signal on the Shewhart control chart is $p = 1 - [P(LCL < \bar{x}_t < UCL)] = 1 - \Phi(z_{\alpha/2} - \delta\sqrt{n}) + \Phi(-z_{\alpha/2} - \delta\sqrt{n})$, where $\Phi()$ is the cumulative standard normal distribution function. The average run length (ARL) is given as $1/p$. For the in-control case, the ARL is $1/\alpha$.

Many proposed alternatives to the Shewhart control chart have been motivated by the fact that, while the Shewhart chart is very effective at quickly detecting fairly large shifts in the process mean, it is relatively slow to detect small, sustained process shifts (e.g., Montgomery (2012)). The cumulative sum, or CUSUM chart introduced by Page (1954) and the exponentially weighted moving average chart, or EWMA, introduced in Roberts (1959) are two very popular alternative charts for detecting smaller process mean shifts. Significant work has also been done in the area of modifications to the Shewhart chart, usually focusing on either the addition of additional rejection or “runs” rules as introduced in Western Electric (1956) or adjustments to the sampling interval, as in, e.g., Reynolds et al (1988) and Pignatiello (1991), or adjustments to both the sampling interval and sample size as in Prabhu et al (1994). What is contemplated here is a variation of the theme of modifying either the sampling interval or sample size considered extensively in the literature.

Two-Stage Sampling Model

It is proposed here that, at each sampling interval, one sample of size n_1 be obtained followed by a contingency-dependent second sample of size n_2 . The subsequent calculations are based on the assumption that a second sample may be obtained, if indicated, within a negligible time interval subsequent to the first sample. Three sets of control limits are used in the construction of the control chart as follows:

$$LCL_1 = \mu - z_{\alpha_1/2} \sigma / \sqrt{n_1}, \quad UCL_1 = \mu + z_{\alpha_1/2} \sigma / \sqrt{n_1},$$

$$LCL_2 = \mu - z_{\alpha_2/2} \sigma / \sqrt{n_1}, \quad UCL_2 = \mu + z_{\alpha_2/2} \sigma / \sqrt{n_1},$$

$$LCL_3 = \mu - z_{\alpha_3/2} \sigma / \sqrt{n_2}, \quad UCL_3 = \mu + z_{\alpha_3/2} \sigma / \sqrt{n_2},$$

where $\alpha_1 > \alpha_2$.

The operation of the proposed chart at each sampling interval is as follows:

- 1) The first sample mean (\bar{x}_{t1}) falls between LCL_1 and UCL_1 , no signal is generated, and monitoring for the sampling interval is completed.
- 2) The sample mean (\bar{x}_{t1}) falls outside either LCL_1 or UCL_1 , but between LCL_2 and UCL_2 , after which a second sample of size n_2 is obtained.
- 3) The sample mean (\bar{x}_{t1}) falls beyond either LCL_2 or UCL_2 , producing a signal.
- 4) The second sample mean (\bar{x}_{t2}) falls outside either LCL_3 or UCL_3 , producing a signal, or between LCL_3 and UCL_3 , completing monitoring for the sampling interval.

The probability of a signal on the two-stage control chart is calculated as follows:

$$P(\text{Signal}) = 1 - P(LCL_2 < \bar{x}_{t1} < UCL_2) + [P(LCL_2 < \bar{x}_{t1} < LCL_1) + P(UCL_1 < \bar{x}_{t1} < UCL_2) - P(LCL_3 < \bar{x}_{t2} < UCL_3)]$$

$$= [1 - \Phi(z_{\alpha_2/2} - \delta\sqrt{n_1}) + \Phi(-z_{\alpha_2/2} - \delta\sqrt{n_1})] + [\Phi(z_{\alpha_2/2} - \delta\sqrt{n_1}) - \Phi(-z_{\alpha_2/2} - \delta\sqrt{n_1}) - \Phi(z_{\alpha_2/2} - \delta\sqrt{n_1}) + \Phi(-z_{\alpha_2/2} - \delta\sqrt{n_1}) - \Phi(z_{\alpha_2/2} - \delta\sqrt{n_1}) + \Phi(-z_{\alpha_2/2} - \delta\sqrt{n_1})]$$

For the in-control case, $\delta = 0$ and $P(\text{Signal}) = \alpha_2 + (\alpha_1 - \alpha_2)\alpha_3$. To facilitate direct comparisons of the proposed chart with the Shewhart \bar{x} chart, it is required that the in-control ARL for the proposed scheme be equal to the in-control Shewhart ARL. This is equivalent to the type I error rate for the proposed chart being equal to α , or $\alpha_2 + (\alpha_1 - \alpha_2)\alpha_3 = \alpha$. It is additionally required for a fair comparison that the average in-control sample size for the two-stage control chart be less than or equal to n , the fixed and constant sample size for the Shewhart control chart. This is accomplished through satisfying the inequality $n_1 + n_2(\alpha_1 - \alpha_2) \leq n$. Treating n_1 as a chart design parameter, n_2 must be chosen to satisfy the inequality $n_2 \leq (n - n_1)/(\alpha_1 - \alpha_2)$. Re-expressing α_2 as $c\alpha$, where $0 < c < 1$, we have $c\alpha + (\alpha_1 - c\alpha)\alpha_3 = \alpha$, which yields $\alpha_3 = (\alpha - c\alpha)/(\alpha_1 - c\alpha)$.

Results

Using the constraints indicated in the previous section, values of n_1 , α_1 , and c were found numerically to satisfy various criteria. First, two-stage charts were designed to minimize the ARL (equivalently average time to signal) for several values of δ . Some representative results are provided in the table below.

[Insert Table 1 about here]

The results in the previous table can be somewhat misleading, insofar as the improved ARL performance for many of the shift sizes comes as a result of an increased sample size, i.e., the average sample size for the two-stage chart varies with the shift size. In practice, this is probably of little concern; however, the following table presents two-stage chart designs

compared with the Shewhart chart on the basis of the average number of observations required to produce a signal at a given shift size.

[Insert Table 2 about here]

Conclusions

With a fairly simple modification, it is possible to dramatically improve upon the basic Shewhart chart with respect to either average run length or average total sampling effort to produce a signal, and frequently both at once, for certain specified ranges of process mean shifts. No comparison is made here, although a cursory investigation indicates that the two-stage chart is a capable rival for the popular CUSUM and EWMA control charts. Future investigations should consider direct comparisons between the two-stage procedure discussed here and other, more established procedures. Analyses of the performance of the two-stage chart under other conditions such as estimated parameters, non-normality of the quality characteristic, and measurement error should also be added.

References

- Champ, C. W. and W. H. Woodall (1987). "Exact Results for Shewhart Control Charts with Supplementary Runs Rules," *Technometrics*, Vol. 29(4), pp. 393-399.
- Montgomery, D.C. (2012). *Introduction to Statistical Quality Control, Seventh Edition*, John Wiley & Sons, Inc., New York.
- Page, E. S. (1954). "Continuous Inspection Schemes," *Biometrics*, Vol. 41(1), pp. 100-115.
- Pignatiello, J. J., Jr., and G. C. Runger (1991). "Adaptive Sampling for Process Control," *Journal of Quality Technology*, Vol. 22(3), pp. 135-155.

Prabhu, S. S., D. C. Montgomery, and G. C. Runger (1995). "A Design Tool to Evaluate Average Time to Signal Properties of Adaptive \bar{x} Charts," *Journal of Quality Technology*, Vol. 27(1), pp. 74-76.

Reynolds, M. R., Jr., R. W. Amin, J. C. Arnold, and J. A. Nachlas (1988). " \bar{x} Charts with Variable Sampling Intervals," *Technometrics*, Vol. 30(2), pp. 181-192.

Roberts, S. W. (1959). "Control Chart Tests Based on Geometric Moving Averages," *Technometrics*, Vol. 42(1), pp. 97-102.

Shewhart, W.A. (1939). *Statistical Method from the Viewpoint of Quality Control*, Graduate School of the Department of Agriculture, Washington, D.C. (Republished by Dover Publications, Inc., Mineola, NY, 1986).

Western Electric (1956). *Statistical Quality Control Handbook*, Western Electric Corporation, Indianapolis, IN.

Table 1. Average Run Length Comparisons for the Shewhart Chart versus Several Two-Stage Designs. Highlighted values indicate the shift size for which the design is optimized.

δ	Shewhart, $n=10,$ $\alpha=.0027$	$n_1=1,$ $\alpha_1=.028,$ $c=0$	$n_1=3,$ $\alpha_1=.085,$ $c=0$	$n_1=5,$ $\alpha_1=.115,$ $c=0$	$n_1=7,$ $\alpha_1=.107,$ $c=.03$	$n_1=8,$ $\alpha_1=.109,$ $c=.13$	$n_1=9,$ $\alpha_1=.09,$ $c=.4$
0	370.40	370.40	370.40	370.40	370.40	370.40	370.40
0.1	244.14	62.97	102.99	145.35	180.41	212.83	237.13
0.2	109.97	33.00	26.18	38.92	53.93	73.92	95.50
0.3	49.61	28.45	11.01	13.40	18.12	26.11	37.06
0.4	24.17	24.48	6.74	6.14	7.55	10.69	15.78
0.5	12.83	20.70	5.03	3.62	3.92	5.20	7.62
0.6	7.40	17.34	4.00	2.57	2.47	2.99	4.20
0.7	4.63	14.48	3.26	2.03	1.81	2.00	2.63
0.8	3.13	12.12	2.71	1.71	1.48	1.52	1.85
0.9	2.28	10.18	2.30	1.50	1.29	1.28	1.44
1.0	1.77	8.60	1.98	1.34	1.18	1.15	1.22
1.5	1.04	4.12	1.24	1.04	1.11	1.00	1.00
2.0	1.00	2.37	1.04	1.00	1.06	1.00	1.00

Table 2. Comparisons of Average Total Observations to Signal for the Shewhart Chart versus Several Two-Stage Designs. Highlighted values indicate the shift size for which the design is optimized.

δ	Shewhart, $n=10,$ $\alpha=.0027$	$n_1=1,$ $\alpha_1=.028,$ $c=0$	$n_1=1,$ $\alpha_1=.117,$ $c=0$	$n_1=1,$ $\alpha_1=.198,$ $c=0$	$n_1=1,$ $\alpha_1=.420,$ $c=0$	$n_1=9,$ $\alpha_1=.096,$ $c=.67$	$n_1=9,$ $\alpha_1=.164,$ $c=.82$
0	3703.98	3693.63	3663.98	3670.65	3637.31	3682.47	3693.14
0.1	2441.38	644.84	1035.40	1347.32	1880.32	2437.24	2531.71
0.2	1099.67	363.04	281.50	382.31	659.17	1073.77	1198.70
0.3	496.10	349.48	131.64	152.66	263.01	465.03	559.28
0.4	241.71	345.48	93.32	84.15	124.57	219.04	279.14
0.5	128.25	341.70	83.71	60.25	69.55	114.45	150.50
0.6	74.02	338.34	81.63	51.71	45.14	66.30	87.39
0.7	46.34	335.48	80.89	48.94	33.43	42.26	54.39
0.8	31.34	333.12	80.34	48.11	27.60	29.34	36.12
0.9	22.79	331.18	79.86	47.76	24.72	21.92	25.52
1.0	17.72	329.60	79.44	47.51	23.37	17.42	19.12
1.5	10.42	325.12	78.11	46.70	22.30	9.85	9.62
2.0	10.00	323.36	77.50	46.30	22.13	9.02	9.01

Occupational Trends in Mass Communication in the Southern U.S.

**Randall Dupont
University of Mobile**

Abstract

Technology has radically transformed mass communication industries in the past two decades, changing organizational workflow processes and workforce composition. Occupational analysis can provide deeper insight into the extent of industry change. This descriptive study examines employment trends for seven mass communication occupations in the United States, with particular emphasis on the southern region. Mass communication occupations studied include radio and television announcers, broadcast news analysts, reporters and correspondents, public relations specialists, editors, technical writers, and writers and authors. Trends in the southern U.S. are compared with the rest of the country.

Introduction

Technological innovation has had a profound impact on occupations in the information age. Perhaps, no better example of this impact exists than in mass communication industries. Communication technologies have converged to redefine the industry landscape, changing how information is received and from whom.

Technological evolution has changed organizational workflow processes, resulting in changes in the occupational composition of the workforce. Khattak, Nasir, and Sultan (2012) examined the role of information technology in the media industry. Since the information age began in 1950, technology has changed how information is produced and disseminate. They examined how the evolution of internet journalism has affected, even eliminated jobs in the production process of traditional print and broadcast media. The authors concluded information technology played a tremendous role in transforming the media industry, particularly print, broadcast, and electronic media.

This technological impact was not unexpected and has been a topic of interest in journalism for some time. John Pavlik's (2001) *Journalism and New Media* examined how new communication technologies were altering journalism, while Paschal Preston's (2001) *Reshaping Communications: Technology, Information and Social Change* attempted to assess the impact of the technology on the profession in light of the Kondratieff waves of capitalism. Writing in 1994, Dizard addressed how the media organizations were adapting to changes in audience expectations caused by the new technologies. He predicted newspaper readership would decline as technology use increased (Dick, 1996).

The revolutionary aspect of the new technology is its ability to enable what and how information is received, and from whom. Fifty percent of all adults owned either a smartphone or tablet in 2012. Sixty-six percent of those owners got their news on their device and 37% checked it daily. Americans are now able to get their news whenever and wherever (Mitchell, Rosenstiel, & Houston, 2012). If recent journalism and mass communication graduates are any indication, the shift from traditional media has been dramatic. Three out of four graduates reported getting news online in 2012. Printed newspaper use among graduates dropped from 61% in 2006 to 37% in 2012, while broadcast use for news dropped from 75% in 2006 to 64% in 2012 (Boyles, 2013).

Universities are feeling the effects of the changing mass communication workforce as bleak job prospects decreased enrollment and force graduates to extend their education. Enrollment in journalism and mass communication undergraduate programs declined in 2011 and 2012, the first back-to-back annual declines in 20 years. Master degree enrollment dropped 2.9% in 2012 and 9.4% the year earlier. Furthermore, the number of undergraduate journalism and mass communication programs offered by universities declined 1.2% in 2012 and by 2.3% at the master's level programs that year. Nevertheless, doctoral program enrollment increased by 4.2% and 4.9% in 2011 and 2012, respectively, with full-time faculty teaching in those programs increasing 5.9% (Becker, Vlad, Simpson, & Kaplen, 2013).

In a free market economy, organizations restructure to meet the needs of society. Mass communication industries are no different. Restructuring has led to a remixing of the occupational composition in the industry, but to what extent have occupations changed? Sampson and Reardon (2011) recommended examining occupational changes in both percentage and absolute terms. Their review of the literature found that technology and globalization were fundamentally reshaping the workplace. Organizations were rapidly adapting their workforce to the change and that classification schema used for occupations remains relatively stable for analysis purposes. However, Sampson and Reardon (2011) believe that technological advances quicken the pace of job changes within a given occupation. They distinguish between absolute and percentage changes in occupations in their analysis and argue for use of both. Some of the fastest growing occupations in percentage terms are relatively small in absolute terms. On the other, hand a small percentage change in some occupations may produce a substantial change in absolute terms.

Measuring industry occupational change can be done through surveys or examination of existing labor statistics data. Employment surveys in mass communications are not new, but have been limited to the job prospects of new entrants in the profession or projections of job outlook over the next decade. Most notable is the University of Georgia's Annual Survey of Journalism & Mass Communication Enrollments. The annual survey provides insight into the employment prospects of new college graduates. The latest employment survey found that 65.6% of 2012 college graduates with journalism and mass communication degrees obtained full-time employment within six to eight months after graduation, higher than in 2009 when the employment rate reached its lowest point in 24 years at 55.5%. Although still below the 2007 level of 70.25%, new graduate employment is making a recovery (Boyles, 2013).

Another common type of employment survey focuses on occupational outlook. The Department of Labor and Bureau of Labor Statistics periodically publishes the *Occupational Outlook Quarterly* and maintains the *Occupational Outlook Handbook* on the Bureau's website. The publication is an excellent prospective resource, focusing on 10-year national employment projections. However, it does not go far enough to help researchers identify regional occupational trends.

Missing from the literature are regional studies on mass communication, particularly for the southern region of the U.S. This may be because regional differences are assumed to be nonexistent, irrelevant, or transitory. However, when Moore (1951) conducted a regional analysis of mass communications in the southern U.S. in the early 1950s, he found that "the people of the South do not have, and therefore do not use, the media of mass communication to the extent they are used by other citizens of the nation" (p. 375). Moore says Southerners are happy to point out their differences from other regions and he suggests that the lack of effective media communications in the South is an important factor in maintaining that difference. He goes on to explain that social well-being is dependent upon mass communications because without such communications "stereotypes and prejudices tend to replace accurate and factual information" (p. 375). He concluded the southern U.S. "differs materially from other regions of so closely knit a society as that of the United States" (p. 376).

Do differences in mass communications remain in the Southern U.S. compared to the rest of the country, as Moore suggested? An examination of trends in mass communication-related occupations in the region can provide insight into that question. This study examines changes in the industry's occupational mix as well as trends at the national and southern regional level. This study is primarily descriptive, but reasons for industry changes are explored in the discussion.

Scope

This research examines changes in national, regional, and state employment in mass communication occupations from 1997 through 2012. This descriptive study provides scholars and educators with a look at the past to better understand the direction and magnitude of industry employment trends. In addition, it should help educators guide students toward growing career opportunities or at least help them avoid entering declining occupations. While the focus of the research is the southern United States, national trends are developed for comparison purposes.

This study aggregates relevant data on specific mass communication occupations in an attempt to discover underlying patterns of employment change. Furthermore, the research uses the most recently available location quotient data to determine significance in geographical differences in mass communication occupations between the southern U.S. and rest of the country.

Data and Methodology

Data for this analysis were obtained from the U.S. Bureau of Labor Statistics' (BLS) Occupational Employment Statistics database. Employment level data were collected for seven mass communication-related occupations for 1997 through 2012 and occupational concentration data obtained for the most recent year, 2012. The seven communication occupations studied fall within Standard Occupational Classification (SOC) Minor Group 27-3000, Media and Communication Workers. Media and communication workers include radio and television announcers, reporters and correspondents, public relations specialists, editors, technical writers, and writers and authors. Table 1 provides examples of job titles for each occupation. A complete BLS definition of each occupation is found in Appendix A.

[Insert Table 1]

Although the Bureau of Labor Statistics has been publishing the Occupational Employment Statistics database since 1997, occupational classifications were fluid in the initial years making trend analysis back to 1997 difficult, except on an aggregate level. For example, broadcast news analysts were initially a separate classification in 1997 and 1998, but later combined with reporters and correspondents from 1999-2003. Likewise, editors were once included with technical writers and authors, but later separated from those occupations. Not until 2004 did the Standard Occupational Classification for media and communication workers (SOC Minor Group, 27-3000) adopt its present form. Therefore, 2004 data are used as the starting point for trend analysis in specific occupations. However, trend analysis on an aggregate level is not affected by reclassifications and where available these occupational trends are examined back to 1997.

The study examines employment levels and associated changes in mass communication-related occupations in the southern United States region, making comparisons with the rest of the country. For purposes of this study, the southern U.S. region includes the following states represented by the Southern States Communications Association (SSCA): Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia. While SSCA membership is not confined to this region, memberships from these states compose the vast majority of the association (C. Cates, personal communication, September 5, 2013).

Time-series analysis is used to examine trends in national and regional employment for 1997 through 2012. Comparative analysis is used in examining employment differences between southern U.S. states (SUS) and the rest of the country (ROC). Cross-sectional analysis is used in examining state-based occupational concentration and T-test are used to determine regional difference by occupation.

Results

The results of this analysis are divided into the following sections: national, regional, state, and geographical concentration.

National Employment

This section analyzes national aggregate employment trends in each of the seven selected occupations of the mass communication field. Figure 1 shows a 15-year trend in total U.S. mass communication occupations as well as annual percentage changes. From 1997 to 2012 employment in mass communication occupations increased 23% from 381,300 to 470,550. Peak employment was reached in 2008 at 536,540 and has since declined by 12% or 65,990 jobs. However, the rate of decline has slowed in recent years, as indicated by the dotted line. Annual declines peaked in 2010 at 6%, slowing to only 2% by 2012.

Notable in Figure 1 is the stair-step growth pattern in employment in the first 11 years of the chart. From 1997-1999, employment grew at an annual rate of 4.9%, and then plateaued at a .85% growth rate from 2000-2004. Mass communication hiring accelerated again in late 2004 through 2008, averaging 4.2% a year and peaking just six months after the start of the recession. However, mass communication occupations have not rebounded during the recovery. Since its peak in 2008, the annual employment growth rate has been -3.2%, the first sustained decline in the past 15 years.

[Insert Figure 1]

The table in Appendix B contains employment data at the national level by occupation for each year since 2004. However to better illustrate the employment changes reflected in the data, Figure 2 below shows trend percentage using 2004 as the base year. In other words, an occupation's employment level for each subsequent year is expressed as a percentage of its 2004 level. As seen in Figure 2, public relations specialist had the largest increase, peaking in 2009 at 1.46 times or 146% of its 2004 level. Editors, technical writers, and writers and authors rose above 2004 levels with writers peaking in 2007 and editors and technical writers peaking in 2008. Announcers and broadcast news analyst never exceeded 2004 levels, while reporters kept parity until 2006 before falling behind. Interestingly, public relations specialists were not only the fastest rising group, but the last occupational group to peak in employment before the recent decline.

[Insert Figure 2]

The composition of occupations within the mass communication field is changing as well. Table 2 compares occupational composition of the field in 2004 and 2012 at the national and regional level. At the national level, all occupations declined proportionately, except public relations specialists which grew by over 6 percent. The same held true at the SUS regional level, except technical writers grew as well as public relations specialists. Comparing the latest occupational composition of the region with the national composition, the southern U.S. had a larger proportion of announcers, broadcast news analysts, public

relations specialists, and technical writers than the national composition and a lower proportion of editors and writers and authors.

[Insert Table 2]

Regional Employment

This section compares aggregate employment trends in the mass communication occupations in the southern U.S. (SUS) with the rest of the country (ROC). Since national employment trends are already shown in Figure 1, Figure 3 separates southern regional employment from the rest of country for the period 1997-2012. Over this 15-year period, employment in the southern region has grown consistent with the rest of the country. Both regions peaked in 2008 and have since declined. Employment in the southern region peaked in 2008 at 133,900, but declined in 2012 to 113,410, representing a loss of 20,490 jobs or 15% from its peak. Mass communication employment in the rest of the country peaked the same year at 402,640, but then declined to 357,140, a loss of 45,500 jobs or 11%. Data for Figure 3 are provided in Appendix C.

[Insert Figure 3]

State Employment

Table 3 examines changes in total mass communication occupations among states in the southern region by comparing employment levels in 2004 and 2012. As of 2012, employment levels in the mass communication occupations in all southern region states remained below their peak year. Variances from the peak ranged from 2 percent below in Louisiana and North Carolina to 31 percent below in Florida. However, eight of the 11 southern region states are up in employment since 2004, with Georgia and Texas up over 21 percent each. Florida remains furthest behind 2004 levels running 25 percent below, while Arkansas and Tennessee are 11 and 5 percent below, respectively.

Peak years varied as well, with the effects of the recession impacting the region's states at different times. Communication occupations peaked in some states as early as 2006 and as late as 2009 in others. Although the recession hit in December 2007, mass communication employment did not peak in Alabama, South Carolina, and Texas until 2009. Florida and Tennessee on the other hand peaked in 2006, more than a year before the recession started.

[Insert Table 3]

Trends in specific occupations at the regional level were generally consistent with those at the national level. Table 4 breaks down the percentage change in each mass communication occupation by state during the 2004-12 period. Consistent with the national trend, reporters and correspondents declined in every state, while radio and television announcers faced declines in nine of the 11 states. Radio and television announcers declined the most in Mississippi and Virginia at 43-44%, with reporters experiencing a 47% decline in

North Carolina. On the other hand, broadcast news analysts fared well in some states, bucking the national trend. Alabama and Mississippi both experienced strong gains in the occupation, 31% and 50% respectively. Public relations specialists saw the most significant gains of all the occupations. Nine of the 11 regional states reported increases in the hiring of public relations specialists, with Georgia leading the group with a 127% increase, South Carolina at 95%, Texas at 79%, and Mississippi at 72%. Nationally, public relations specialists grew from 166,210 to 201,280 between 2004 and 2012, as shown in Appendix B. Twenty-seven percent of the 35,090 new public relations specialists, or 9,300 positions, were created in the southern region. Employment changes for editors, technical writers, and writers and authors were more mixed within the region. Technical writers performed the best among the three occupations with Alabama yielding the largest percentage gain at 63%, followed by a 51% gain in Virginia, 50% in South Carolina, and 48% in North Carolina. Technical writers gained 1,350 positions nationally between 2004 and 2012, with 90% of the gains coming from the region.

[Insert Table 4]

Appendix D compares employment level changes by occupation in the southern region with the rest of the country. While percentage changes in employment for announcers, PR specialists, and writers and authors in the region were equal to those in the rest of country, technical writers saw above normal gains and broadcast news analysts and reporters saw above normal losses. Of the national losses in broadcast news analysts and reporters, the region accounted for 47 and 45 percent of those losses, respectively.

Geographical Concentration

This section analyzes the geographic concentration of mass communication-related occupations in 2012 based on location quotient. Location quotient (LQ) measures an area's share of employment in an occupation relative to the national share. It is useful for measuring the concentration of occupations in a particular geographic area. A quotient of 1.0 means employment for an occupation in a particular area is equal to the national average based on population size. A location quotient of greater than 1.0 means the occupation has a greater concentration employed in the area than nationally, and a location quotient of less than 1.0 means that occupation is underrepresented in the area. Therefore, the location quotient is simply a measure of a given area's distribution of employment by occupation to a larger reference area (Bureau of Labor Statistics, 2011).

Table 5 shows the regional difference in occupations by location quotient, while Appendix F provides a detailed breakdown of each occupation's location quotient by state. As shown in Table 5, regional differences remain. All mass communication occupations in the southern U.S. had a lower mean location quotient than the rest of the country. Five of the seven occupations were underrepresented in the region, with only radio and television announcers and broadcast news analyst overrepresented. For all other occupations, the average location quotient for the region fell below the rest of the country. Significant regional differences were found among three occupations: reporters and correspondents; editors; and writers and authors.

Appendix F shows were several bright spots for the region. Alabama has a high concentration of broadcast news analysts, announcers, and technical writers. Arkansas, Louisiana, Mississippi, and North Carolina have a high concentration in announcers, with the latter two also high in broadcast news analysts. And Virginia provided the best opportunities in the field with high concentrations in five of the seven occupations, with technical writers ranking the highest.

[Insert Table 5]

Discussion and Conclusion

Moore's (1951) conclusion in the 1950s that mass communications in the southern U.S. differed from the rest of the country remains partially true today, according to occupational differences. This study found that the concentration of mass communication occupations in the southern U.S. remains below the rest of the country for all occupations and significant deficiencies were found among reporters and correspondents, editors, and writers and authors.

Occupations in the southern region paralleled the country's expansion and recessionary employment cycles. While occupations in the region grew slightly slower from 1997-2008 than the rest of the country, 39.7% versus 40.1%, the region lost employment in the industry at a faster rate since the peak of the recession, 18.1% compared to 9.3%.

Although the recession is long over, the continued declined in mass communication employment since 2008 indicates that factors other than economics are involved. The 2008 recession served as a catalyst for change, coinciding with a larger cultural and technological shift in society. The convergence of mobile technologies with social media changed the information paradigm of how news is aggregated and distributed. Changes in industry occupational mix began shortly after the start of social media applications like Facebook in 2004 and Twitter in 2006 and the introduction of the Apple iPhone in 2007. The decline in reporters and correspondents and concurrent rise in public relation specialists in the last decade reflects a cultural shift to a mobile information society, making mass communications increasingly social, real-time, and direct to end user. This technological revolution has redefined industry occupations, although at a different pace in the southern U.S.

Particular attention should be paid to the extraordinary growth in public relations specialists. Not only has this been the fastest growing mass communication occupation in the nation and southern region, but current trends have it accounting for 49% of total employment in the field by 2016 (see Appendix F). Public relations specialists are the only occupation in the study to emerge from the 2008 recession with a greater proportion of the industry's occupational mix than in 2004, although still below pre-recession levels. In the southern U.S., public relations specialists are expected to grow at an even faster rate than the national average, 27% compared to 22%.

Two possible explanations for the growth in public relations specialists are the new information paradigm or an outdated Standard Occupational Classification system. Advances in mobile and social media technologies have allowed organizations to reach customers directly, bypassing the traditional media infrastructure. Social media has changed the role of the public relations specialist from serving less as an intermediary for information gatekeepers and more as a promoter of images and products. Today, public relations specialist functions more as a marketer and revenue generator, better justifying their existence. Therefore the growth of public relations specialists may be a result of social media's new role in the occupation.

On the other hand, the statistical growth in public relations specialists may result from an outdated occupational classification system. Changes to the Media and Communication Workers Standard Occupational Classification group were last made in 2004, at the dawn of the social media and technological revolution. Since then, social media and mobile technology have redefined the industry. For lack of a better classification, social media-oriented occupations are being lumped with public relations specialists. Some may argue the two occupations are the same, but a closer examination of job descriptions indicates otherwise.

Public relations specialists work “through” various intermediary communication media, which entails interacting with a network reporters, news analysts, and media organizations to shape the public's perception. By skipping the intermediary, social media specialists reach the public directly and quicker. Social media specialists rely less on interpersonal skills to navigate these intermediaries and more on analytical and technical abilities to target viewership. Furthermore, social media specialists have more control over the message and intended audience.

Technically, the public relations specialist occupation's broad definition, as shown in Appendix A, allows for inclusion these emerging digital occupations. However, recognizing the need to keep job descriptions current, in early 2014 the Bureau of Labor began the multiyear process of revising the Standard Occupational Classification system. The revision process is expected to be completed by 2017 and implemented by 2018. Although it will be years before the Standard Occupation Classification for media and communication workers is revised to reflect the growth in the new digital communication occupations, the evidence points to a transition in industry occupations that is well underway.

References

- Becker, L., Vlad, T., Simpson, H., & K. Kalpen. (2013). *2012 Annual Survey of Journalism & Mass Communication Graduates*. James M. Cox Jr. Center for International Mass Communication Training and Research, University of Georgia, August 9.
- Boyles, J. (2013, August 9). Job market shows some improvement for recent communications graduates, *Journalism.org: Pew Research Center's Project for Excellence in Journalism*. Retrieved from

http://www.journalism.org/analysis_report/job_market_shows_some_improvement_recent_communications_graduates

Bureau of Labor Statistics. (2011). Using location quotients to analyze occupational data. *Occupational Employment Statistics (OES) Highlights*, April. Retrieved April 25, 2013 from http://www.bls.gov/oes/highlight_location_quotients.pdf

Dick, S. J. (1996). Old Media/New media mass communication in the information age, special edition. *Journalism and Mass Communication Quarterly*, 73(4), 1009-1010. Retrieved from <http://search.proquest.com/docview/216923551?accountid=34657>

Khattak, A., Nasir, M., & Sultan, K. (2012). The role of information technology in media industry. *International Journal of Business and Social Science*, 3(6). Retrieved February 15, 2014 from <http://search.proquest.com/docview/924460646?accountid=34657>.

Mitchell, A., Ronsensiel, T., & Houston, L. (2012, October 1). Future of mobile news, *Journalism.org: Pew Research Center's Project for Excellence in Journalism*. Retrieved from http://www.journalism.org/analysis_report/future_mobile_news

Moore, H. (1951). Mass communications in the South. *Social Forces*, 29 (4), 365-376. Retrieved February 15, 2014 from <http://www.jstor.org/stable/2572713>, DOI: 10.2307/2572713.

Pavlik, J. (2001). *Journalism and new media*. Columbia University Press.

Preston, P. (2001). *Reshaping communications: Information and social change*. SAGE Publications.

United States Department of Labor, Bureau of Labor Statistics. (2013). Occupational Employment Statistics [Data file]. Retrieved from <http://www.bls.gov/oes/>

SOBIE 2014

Table 1

Examples of Mass Communication Occupations

Occupation	Examples
Radio and Television Announcers	Radio Disc Jockey, Talk Show Host, Game Show Host
Broadcast News Analysts	News Commentator, News Anchor, Newscaster
Reporters and Correspondents	Columnist, Foreign Correspondent, Film Critic
Public Relations Specialists	Press Secretary, Publicity Writer, Lobbyist
Editors	Copy Editor, Technical Editor, Advertising Editor
Technical Writers	Specifications Writer, Documentation Writer, Medical Writer
Writers and Authors	Advertising Copy Writer, Television Writer, Playwright

Source: Department of Labor, Standard Occupational Classification

SOBIE 2014

Table 2

Composition of Mass Communication Occupations by Percent, 2004 and 2012.

Occupation	<u>National</u>		<u>Southern U.S.</u>	
	2004	2012	2004	2012
Radio and television announcers	9.1	6.7	10.8	8.3
Broadcast news analysts	1.5	1.1	2.2	1.3
Reporters and correspondents	11.5	9.7	11.5	9.0
Public relations specialists	36.5	42.8	40	46.8
Editors	22.1	21.0	18.2	16.4
Technical writers	9.9	9.8	10.1	10.9
Writers and authors	9.4	8.9	7.6	7.2

Source: Derived from Bureau of Labor Statistics, Occupational Employment Statistics

SOBIE 2014

Table 3

Total Employment Change by State in Southern Region, 2004-2012.

State	2004	Peak '04-'12	Peak Year	2012	% Change Since Peak	% Change '04-'12
Alabama	4,950	6,740	2009	5,260	-22	6
Arkansas	2,890	3,050	2007	2,460	-16	-11
Florida	28,630	31,340	2006	21,620	-31	-25
Georgia	7,860	12,120	2008	9,540	-21	21
Louisiana	3,630	4,230	2008	4,130	-2	14
Mississippi	2,490	3,380	2007	2,730	-19	8
North Carolina	9,350	10,650	2008	10,420	-2	11
South Carolina	3,630	5,270	2009	3,940	-25	9
Tennessee	6,930	7,080	2006	6,560	-7	-5
Texas	25,120	37,300	2009	30,340	-19	21
Virginia	14,960	17,830	2007	16,410	-8	10

Source: Bureau of Labor Statistics, Occupational Employment Statistics

SOBIE 2014

Table 4

Percent Change in Employment by Mass Communication Occupation and State, 2004-2012.

State	Announcer	Broadcaster	Reporter	PR Sp	Editors	Technical	Writer
Alabama	-18	31	-31	42	-19	63	-28
Arkansas	-16		-19	-16	12	-35	23
Florida	-10	-32	-2	-36	-21	-18	25
Georgia	-23	-58	-9	127	-20	16	-39
Louisiana	20		-14	61	-24	42	-19
Mississippi	-44	50	-3	72	-27	0	3
N. Carolina	-19	-31	-47	52	15	48	-19
S. Carolina	8		-38	95	-9	50	-47
Tennessee	-14	-43	-26	7	1	-7	-4
Texas	-32	-21	-19	79	-3	-8	13
Virginia	-43	0	-11	12	9	51	1

Source: Derived from Bureau of Labor Statistics, Occupational Employment Statistics

SOBIE 2014

Table 5

Mean Location Quotient by Occupation and Geographic Distribution, 2012.

Occupation	Southern U.S.	Rest of Country	P-value
Radio and TV announcers	1.14	1.30	0.297
Broadcast news analysts	1.25	1.51	0.547
Reporters and correspondents	0.78	1.37	0.007
Public relations specialists	0.80	1.16	0.115
Editors	0.58	0.95	0.010
Technical writers	0.78	1.08	0.176
Writers and authors	0.61	1.05	0.016

Source: Derived from Bureau of Labor Statistics, Occupational Employment Statistics

Note: Significant in bold at the 95% confidence level.

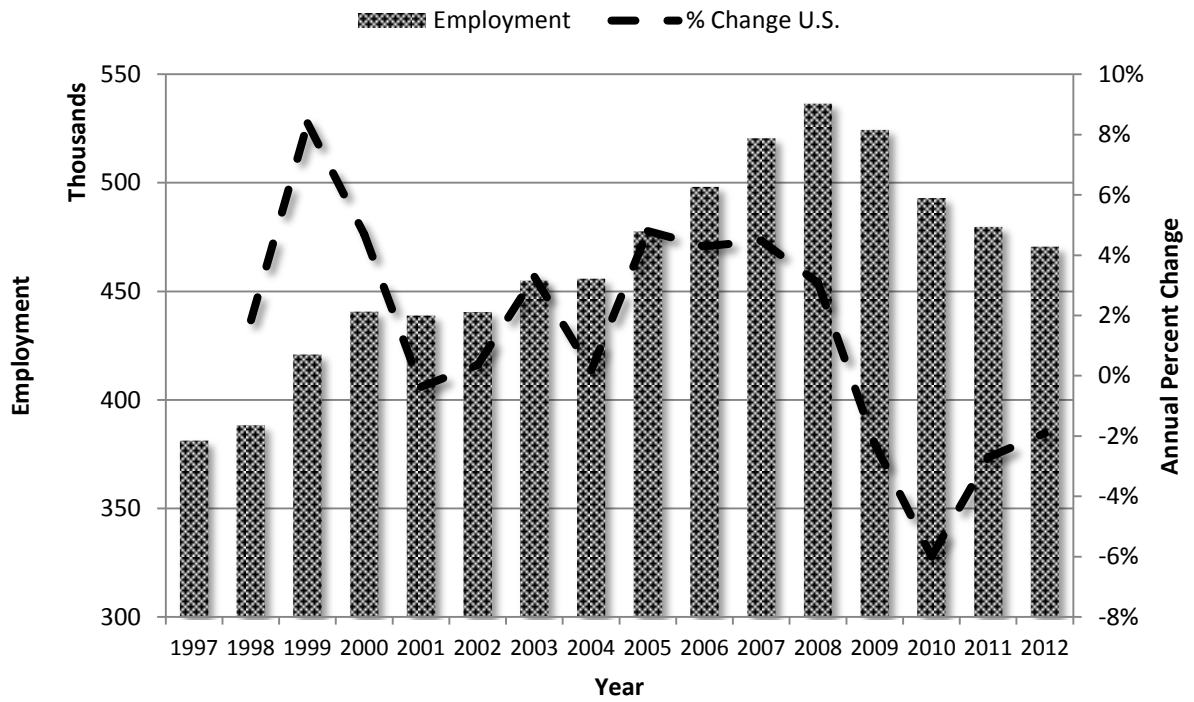


Figure 1. Total Mass Communication-Related Employment in U.S. and Annual Percent Change, 1997 and 2012.

Source: Bureau of Labor Statistics

SOBIE 2014

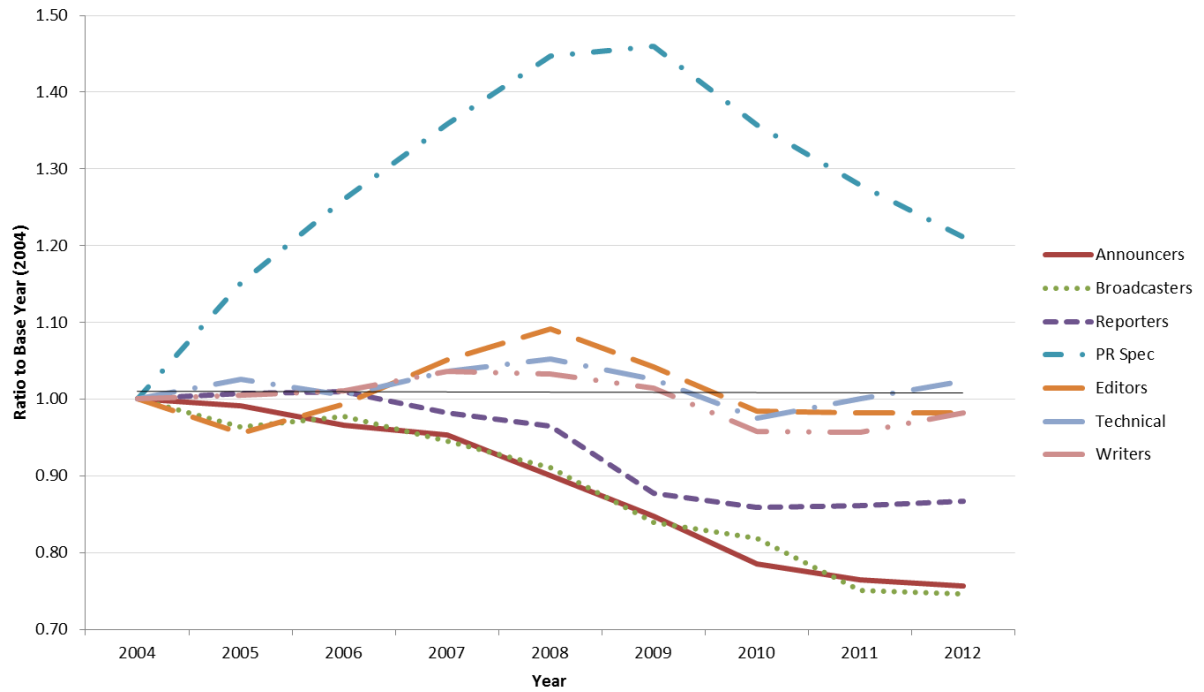


Figure 2. Ratio of Employment by Occupation Relative to 2004.

Source: Bureau of Labor Statistics

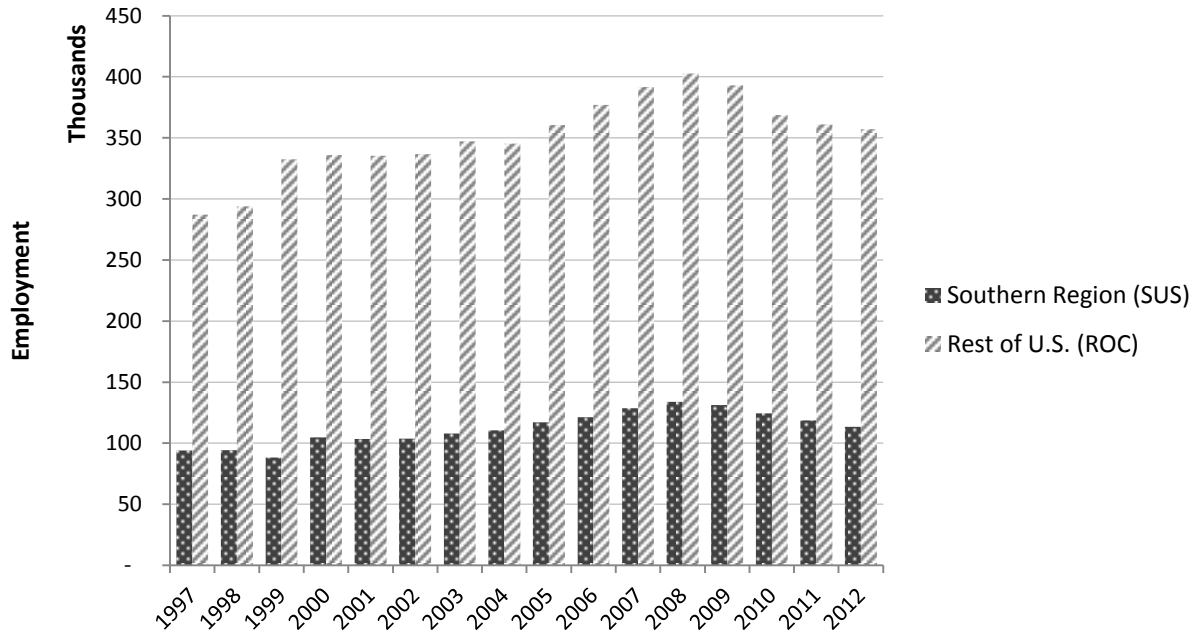


Figure 3. Employment in the Southern U.S. (SUS) versus Rest of Country (ROC), 2004-2012.

Source: Bureau of Labor Statistics

Appendices

Appendix A

Standard Occupational Classification Descriptions for Select Communication Occupations

SOC Code	Occupation	Description
27-3011	Radio and Television Announcers	Speak or read from scripted materials, such as news reports or commercial messages, on radio or television. May announce artist or title of performance, identify station, or interview guests. Excludes "Broadcast News Analysts" (27-3021).
27-3021	Broadcast News Analysts	Analyze, interpret, and broadcast news received from various sources.
27-3022	Reporters and Correspondents	Collect and analyze facts about newsworthy events by interview, investigation, or observation. Report and write stories for newspaper, news magazine, radio, or television. Excludes "Broadcast News Analysts" (27-3021).
27-3031	Public Relations Specialists	Engage in promoting or creating an intended public image for individuals, groups, or organizations. May write or select material for release to various communications media.
27-3041	Editors	Plan, coordinate, or edit content of material for publication. May review proposals and drafts for possible publication. Includes technical editors.
27-3042	Technical Writers	Write technical materials, such as equipment manuals, appendices, or operating and maintenance instructions. May assist in layout work.
27-3043	Writers and Authors	Originate and prepare written material, such as scripts, stories, advertisements, and other material. Excludes "Public Relations Specialists" (27-3031) and "Technical Writers" (27-3042).

Source: Bureau of Labor Statistics

SOBIE 2014

Appendix B

Employment Level by Mass Communication Occupation in U.S., 2004-2012.

Year	Announcer	Broadcaster	Reporter	PR Spec	Editors	Technical	Writer
2004	41,430	6,930	52,550	166,210	100,790	45,100	42,780
2005	41,090	6,680	52,920	191,430	96,270	46,250	43,020
2006	40,020	6,770	53,060	209,560	100,170	45,330	43,260
2007	39,500	6,550	51,620	225,880	105,920	46,740	44,310
2008	37,290	6,310	50,690	240,610	110,010	47,460	44,170
2009	35,130	5,820	46,130	242,670	105,040	46,270	43,390
2010	32,520	5,670	45,130	225,590	99,160	43,990	40,980
2011	31,680	5,200	45,270	212,510	98,990	45,120	40,930
2012	31,340	5,170	45,570	201,280	99,040	46,160	41,990

Source: Bureau of Labor Statistics, Occupational Employment Statistics

Appendix C

Total Employment in Mass Communication Occupations by Region, 1997-2012.

Year	SSCA Region	Rest of U.S. (Non-SSCA)
1997	94,000	287,300
1998	94,390	293,930
1999	88,210	332,630
2000	104,720	335,870
2001	103,610	335,340
2002	103,720	336,820
2003	107,870	347,120
2004	110,440	345,350
2005	117,200	360,460
2006	121,180	376,990
2007	128,670	391,850
2008	133,900	402,640
2009	131,390	393,060
2010	124,470	368,570
2011	118,680	361,020
2012	113,410	356,380

Source: Bureau of Labor Statistics, Occupational Employment Statistics

SOBIE 2014

Appendix D

Employment Change in Occupations, SSCA vs Non-SSCA Regions, 2004-2012.

Occupation	<u>Change</u>		<u>Percent</u>		SSCA Change As Percent of National*
	SSCA	Non-SSCA	SSCA	Non-SSCA	
Announcers	-2,520	-6,200	-21	-22	29
Broadcast news**	-910	-1,020	-37	-25	47
Reporters	-2,470	-3,010	-19	-8	45
PR specialists	9,300	25,840	21	21	26
Editors	-1,470	340	-7	0	130
Technical writers	1,220	130	11	0	90
Writers & authors	-180	-320	-2	-1	36

Source: Bureau of Labor Statistics, Occupational Employment Statistics

Note: * National comparison includes SSCA and non-SSCA data. Percent does not indicate direction. ** Arkansas, Louisiana & South Carolina did not report data for this occupation in 2012.

Appendix E

Location Quotient of Occupation by State, 2012.

State	Announcer	Broadcaster	Reporter	PR Sp	Editors	Technical	Writer
Alabama	1.64	2.31	0.75	0.73	0.52	1.28	0.47
Arkansas	1.38		1.04	0.52	0.53	0.28	0.44
Florida	0.96	0.87	0.98	0.87	0.67	0.69	0.81
Georgia	0.81	0.63	0.70	0.82	0.49	0.75	0.44
Louisiana	1.46		0.86	0.68	0.40	0.26	0.35
Mississippi	1.27	1.41	0.78	0.83	0.33	0.23	0.87
N. Carolina	1.02	1.40	0.59	0.80	0.56	0.96	0.55
S. Carolina	0.94		0.82	0.71	0.45	0.43	0.30
Tennessee	1.64	0.74	0.79	0.63	0.57	0.45	0.63
Texas	0.71	0.99	0.60	0.96	0.59	0.92	0.59
Virginia	0.74	1.61	0.66	1.27	1.23	2.29	1.21
Average	1.14	1.25	0.78	0.80	0.58	0.78	0.61

Source: Bureau of Labor Statistics, Occupational Employment Statistics

SOBIE 2014

Appendix F

Employment Level in SSCA Region for 2004-2012 with 2016 Projections.

Year	Announcer	Broad caster	Reporter	PR Spec	Editors	Technical	Writer	Total
2004	11,900	2,440	12,710	43,770	20,090	11,160	8,370	110,440
2005	11,830	2,580	11,960	51,110	19,620	11,760	8,340	117,200
2006	11,530	2,430	12,090	56,180	18,090	11,530	9,330	121,180
2007	10,940	2,370	12,080	60,720	21,420	11,870	9,270	128,670
2008	10,780	2,040	12,070	65,310	22,750	11,820	9,130	133,900
2009	9,890	1,420	11,090	66,660	20,900	12,170	9,260	131,390
2010	9,450	1,840	10,590	62,400	19,790	12,050	8,350	124,470
2011	9,210	1,550	10,680	58,040	18,620	12,330	8,250	118,680
2012	9,380	1,530	10,240	53,070	18,620	12,380	8,190	113,410
2016	7,459	841	9,140	67,656	19,189	12,954	8,326	125,565

Source: Bureau of Labor Statistics, Occupational Employment Statistics

Note: Projections in bold.

Probability Distributions: A Comparison for Risk Management Purposes

Raymond M. Johnson, Ph.D.

Kenneth Linna, Ph.D.

Joseph A. Newman, Ph.D.

Auburn University at Montgomery

Abstract

In recent years there has been a growing concern over the appropriateness of traditional probability distributions for risk management analysis. It is widely known, but rarely accepted in conventional economic and financial modeling that the assumptions underlying many probability distributions, including the normal distribution, do not provide appropriate descriptors of most related financial and economic data. Recent economic and financial events have renewed interest in the discovery, analysis and management of risk exposure. This increased interest in risk exposure measurement and management has resulted in a renewed interest in, and application of, some long existing probability distributions as well as many probability distributions that exist at the periphery of statistical analysis. Congruently, software is also becoming more assessable to academicians, practitioners, and even classroom applications that enables one to analyze data of interest and choose the analytical methodology that is most appropriate for the analysis at hand. This paper evaluates a number of distributions as to their appropriateness for risk management analysis and to ascertain the extent to which they can be relied upon to provide good data descriptors from one sample period to another and of the same genre. After the introduction, the paper provides a brief review of the literature related to risk management and related quantitative methodologies. Next, a discussion of the risk management techniques and the data to be analyzed by selected, but relevant, probability distributions is provided. Lastly, the summary, conclusions, and suggestions for additional research are provided.

Introduction

The purpose of this study is to see if the application of a number of theoretical and computational methodologies to selected financial data offers promised improvements in “goodness of fit” accuracy over conventional theoretical constructs and methodology. The scope of this study is constrained to an evaluation, in terms of goodness of fit, of a number of

probability distributions rather than to an evaluation of risk management techniques. Those probability distributions providing the best fit of the data can be used to determine the probability that the value at risk (VaR) will exceed a certain amount. In years past much of the theoretical analysis and portrayal of risk analysis has relied on the conventional assumption that probable risk exposures conform to a pattern best described by the normal distribution. In recent years many risk analysts have become increasingly concerned whether conventional methodology is adequate for assessing risk exposures associated with many financial instruments, especially financial derivatives. It has been long known among finance and economics academicians, as well as practitioners, that the normal distribution frequently does not accurately reflect the distribution of some financial and economic data. Aragonés and Palfray (2002) point out our traditional financial models and statistical methods sometime fail us when we need them the most. This concern has caused many to turn toward some methodologies that have existed for some time but have been largely ignored by risk managers; the exception being the insurance industry. Much of the renewed interest has turned toward the methodology arising from the study of hydrology, nonlinear relationships, and actuarial science. The insurance industry has had a long established understanding of many aspects of distributions that do not conform to the prescriptions of the normal distribution. Interest in the shape of the various financial distributions and an accurate assessment of the implied risk exposures are very important to the various disciplines of finance because of the need for economic capital (reserves) needed for protection against improbable losses due to severe weather damage, credit risk liquidity risk, excessive trading losses, etc.

As mentioned above, the purpose of this paper is to apply a number of probability distributions to two data sets in order to determine the goodness of fit they each provide. The data we select are daily exchange rate data for the Euro and the Japanese Yen per unit of the U.S. dollar. For risk management purposes, these daily exchange rates, expressed as percentage changes, are a proxy for exchange rate volatility assumed to be the risk exposure of interest faced by the trader, trading desk and consequently the financial institution. The scope of this study is restricted to an evaluation of sixty five probability distributions in an effort to determine which provides the best goodness of fit, and to determine if the ranking remains consistent from one currency to the other. It is beyond the purview of this study to address risk management methodologies as such. However, the best fitting distributions can be utilized to illustrate how the application of different probability distributions to the same data set may lead to different probable occurrences; consequently different risk exposures.

The rest of the paper proceeds as follows. Next a brief background, or foundation, is provided for risk management as it relates to financial institutions including a presentation some of the popular probability distributions utilized in the assessment of financial risk exposure. Following this section is a presentation of the application of selected probability

distributions to determine their goodness of fit with respect to selected exchange rate data. Lastly we present the summary, conclusions, and agenda for future research.

Background

The financial industry, especially certain sectors, is cyclical in nature. Likewise, in response to cyclical downswings, modern societies' responses have been to propose regulatory prophylactics designed to dampen, if not prevent, cyclical downswings. The U.S. recession of the 1890's gave rise to the movement that resulted in the Federal Reserve System. Up to this point despite the repeated occurrence of financial cycles, the founding fathers, and national leaders who followed, resisted the idea of a central banking system. Their reluctance to accept the concept was predicated on their perception of the European system whereby the European governments were heavily dependent on the large banking houses and financial dynasties such as the Rothschild's financial empire. Later systemic changes were made to the regulatory environment of the U.S. in response to the 1930's great depression. Using the Keynesian revolution as a guiding light many governments, and their citizens, of developed nations embraced varying degrees of government intervention into their economies. Despite repeated efforts to prevent cyclic swings, economies still exhibit fluctuating degrees of variability. Consequently, in efforts to quantitatively measure and manage their risk exposure financial institutions have established multinational organizations designed to quantify and formalize procedures with respect to risk exposures. In the United States, the insurance industry is largely regulated by the different states with the various insurance companies determining the risk exposures they perceive and are willing to accept and writing their policies and setting their rates accordingly to the acceptable risk exposures.

In addition to their respective national regulatory environments the global commercial banking industry has formed multinational organizations and groups that set, and periodically modify, compliance agreements with respect to risk exposures, and capital requirements responding to the degrees and types of risk exposures. Prior to 1988 the various countries' regulatory agencies set their own standards with respect to such things as credit standards, ratios of acceptable capital to assets, capital components, acceptable risk exposures, etc., and the degree of enforcement precision. A series of conferences beginning in the year of 1988, and later known as the Basel agreements have been held periodically in Basel Switzerland. Initially known as the Basel agreement it quickly became known as Basel I and is the precursor for Basel IA, Basel II and Basel III. The sequence of agreements is a result of the successes of the previous agreements and recognition of the evolving nature of the finance industry, the development of new finance products, and the risk exposures emitting from these products. Two risk measures arising from the various Basil agreements are the value at risk (VaR) and expected shortfall. As Hull (2012) points out, VaR is directed to the issue of how bad can things get. In addition to the assessment of how bad can things get risk managers need to know the expected loss, that is, expected shortfall. These two concepts are

so commonly utilized by risk managers of the different financial genre, in their calculations of risk exposure and probable occurrence that frequently little thought is given to whether the conventionally used probability distribution provides the best fit of the data. Perhaps another probability distribution, or distributions, would prove to be better. Frequently, risk managers may not know if another probability distribution would provide a better fit for another data sample, even if the data sample is taken from the same series. For one, there are many distributions that are not common knowledge among the profession. Secondly, even if the analyst is satisfied with a given probability distribution's fit of a given data set, there is a chance that it might not provide the best fit for another sample, even if the sample is extracted from the same data set. Lastly, the analyst may decide that a particular probability distribution's parameters may provide a sufficiently close approximation so that it is the preferred methodology because it is widely known and professionally acceptable, thus defensible in a learned, or legal dispute.

To illustrate, the complexity of the issue, financial institutions face a number of risk exposures. These include credit risk, operational risk, market risk, and business risk. As Hull (2012) mentions, Rosenberg and Schuermann (2004) collected data from a variety of sources in order to estimate the different shapes of the above mentioned distributions. Out of the four risk exposures, only market risk usually has a symmetrical probability density function. However, it is not perfectly normally distributed. The other three have probability density functions exhibit characteristics that are either highly skewed, leptokurtic, or both. As an additional complication, the correlations between these risk categories should be accounted for. Consequently it is difficult to aggregate the risk exposures for purposes of determining the aggregate amount of economic capital to hold against probable losses.

Although a detailed discussion of the methodology for estimating required aggregate economic capital is beyond the scope of this study, it is worth noting that Rosenberg and Schuermann (2004) estimate that aggregating and assuming the above mentioned probability loss distributions are normally distributed underestimates the needed economic capital by approximately 40 percent. Clearly methodology that is more appropriate for fitting non-normal distributions is called for.

For example, Hull (2012) presents a methodology called extreme value theory (EVT) that is highly favored by many risk analysts. Hull (2012) vividly explains how the rediscovery, and revived interest in, the works of such early mathematicians as Pareto and Gnedenko (1943), as well as others, provide a means whereby the tails of distributions can be examined and used to measure the heaviness of the tails of a distribution. Likewise, the general shape of the distribution is of little importance. The significance of this is that many data distributions found in finance exhibit the characteristics of kurtosis, skewedness, or both. According to Hull (2012), Gnedenko's (1943) contribution to risk analysis is that "... for a wide class of distributions $F(v)$, the distribution of $F_u(y)$ converges to a generalized

Pareto distribution as the threshold of u is increased.” According to Hull (2012) only two parameters need to be estimated for (EVT); the shape parameter and the scale parameter where the scale and shape parameters can be estimated by maximum likelihood methods (Hull, 2012, p. 315). According to Hull (2012, p. 315) for most financial data, the shape parameter usually has a value ranging from 0.1 to 0.4. A remaining value, designated as a threshold value, is selected by the analyst. Utilizing these three parameters, (EVT) methodology is used to estimate the probability that a given value will exceed the selected u value. One of the drawbacks of (EVT) is that the estimates of the shape and scale parameters are sensitive to the selected threshold value. However, Hull (2012, p.315) contends that a threshold value, u , selected near the 95th percentile point of the empirical distribution is usually a safe selection. As mentioned, (EVT) is favored by many risk managers for estimating the value at risk (VaR) and the expected shortfall associated with risky ventures whose probability distributions most likely do not conform to, or approximate, the normal distribution. When financial or economic data distributions conform to, or closely approximate, the normal distribution many analysts may naturally prefer to use the normal distribution for testing and forecasting purposes. Although the above mentioned distributions are frequently utilized by financial risk managers, there may be less conventionally accepted probability distributions that provide better parameter estimates of the data of interest. For example the Wakeby distribution is highly favored by those, for example Griffiths (1989), studying flood patterns whose frequency distributions often exhibit kurtosis and are frequently skewed. In what we show below the Wakeby performs relatively favorably. Another distribution favored in some circles, for example, Elghaly, et.al. (2008), but not widely known is the Burr distribution. A third distribution that performs relatively well when fitted to our data is the Log-logistic distribution. This distribution resembles the normal distribution except it accommodates more observations in the distribution’s tails; leptokurtosis. The Log-Logistic has been successfully utilized, and stood the test of time, in describing abnormally shaped distributions by such analysts as Askar and Smail (1983), Bennett (1983), and Tadikamalla and Johnson (1982). It is not surprising that the Burr and Log-Logistic distributions frequently provide similar results when applied to the same data set because they are in many instances compatible, Zimmer, et. al. (1998), Wu and Yu (2005). These distributions may be more useful for analysis.

The Analysis

The St. Louis Federal Reserve Bank is the source of the daily exchange rate data we utilize in this study. The U.S. Dollar per unit of the Euro and U.S. Dollar per unit of the Japanese Yen for the time span 1-3-2013 – 2-15-14, for a total of 784 observations, are the sources of the results we provide in this study. These currencies and time periods are arbitrary selections. As indicated above, these data are modified so as to be expressed as percentage changes as is customary for risk exposure measurement and management.

In this study we utilize sixty five probability distributions in order to ascertain their respective parameters. The goodness of fit for each distribution is measured by three different tests; the Kolmogorov Smirnov, Anderson Darling, and the Chi-Squared tests. The results of these tests, their respective parameters and goodness of fit tests, are provided in the Appendices.

For the Euro data only thirty seven of the sixty five probability distributions provide statistically significant results. In order to provide a view of the distribution of the Euro's data Appendix A contains a depiction of the Wakeby probability distribution's histogram. Also provided are the rankings of the different significant distributions as well as their parameter values. For the Wakeby probability distribution the parameter values are: $\alpha = 0.10211$, $\beta = 8.2744$, $\delta = -0.14747$, $\Upsilon = 0.00527$, and $\xi = -0.01555$ where α and β are shape parameters and δ and Υ are scale parameters and ξ is the location parameter.

The Kolmogorov Smirnov test ranks the Wakeby distribution highest of the distributions it tested with a rank of one while the Anderson Darling test provides it with a rank of only 28. The Chi-Squared test did not rank the Wakeby distribution. In contrast, the Anderson Darling test ranks the General Logistic test highest as does the Chi-Squared test while the Kolmogorov Smirnov ranks it second. The General Logistic test is a three parameter test with parameter values of $k = -0.03505$, $\delta = 0.0032$, and $\mu = 2.3505E-4$. The Error distribution is likewise a three parameter distribution with $k = 1.2991$, $\sigma = 0.00587$, and $\mu = 5.0163E-5$. For the Euro data the Anderson Darling test ranks it second, followed by the Chi-Squared test with a rank of three. The Kolmogorov Smirnov ranks it fifth however.

The General Extreme Value distribution, highly favored by many risk managers and analysts, with parameters of $k = -0.34775$, $\delta = 0.00585$, and $\mu = -0.00178$ ranked relatively poorly compared to the Wakeby and General Logistic tests. The Chi-Squared test did not rank this distribution. The General Extreme Value's rankings were respectively ten for the Kolmogorov Smirnov test, 27 for the Anderson Darling test parameters.

The Japanese Yen exchange rate data for the abovementioned time period, also expressed in terms percentage changes, and exhibited in Appendix B, exhibits comparable skewedness and kurtosis with the Euro data discussed above. Of the sixty five distributions tested only thirty eight provided significant results. Again, the three goodness of fit tests used in this study, provide conflicting rankings. The Kolmogorov Smirnov test indicates the Wakeby test provides the best fit, and ranks the four-parameter Burr second with the Chi-Squared test providing no conclusive results with respect to the Wakeby test. The four-parameter Burr (4P) test is ranked first by the Anderson Darling test and fourth by the Chi-Squared test. For the Yen data period, the Burr's four parameter values are: $k = 0.86077$, $\alpha = 58.252$, $\beta = 0.17406$, and $\Upsilon = -0.17457$. The Wakeby parameter values are: $\alpha = 0.10588$, $\beta = 9.2898$, $\Upsilon = 0.0048$, $\delta = -0.03169$, and $\xi = -0.01467$, and for Burr (4P) the respective parameters are: $k = 0.86077$, $\alpha = 58.252$, $\beta = 0.17406$, and $\Upsilon = -0.17457$ where k is one of

the continuous scale parameters, $k > 0$, α , also represents the other continuous shape parameter, $\alpha > 0$, β , measuring the degree of dispersion, represents the continuous scale parameter, and γ indicates the location parameter. According to the Kolmogorov Smirnov and the Anderson Darling tests the General Logistic distribution does not perform as well for the Japanese Yen data as it did for the Euro data. Both the Kolmogorov Smirnov and the Anderson Darling tests each rank the Yen fourth. The Chi-Squared test, however, ranked it second. The Error distribution with parameters of $k = 1.0$, $\sigma = 0.00609$, and $\mu = 3.1150E-4$ does not do as well for the Yen as it did for the Euro. The Anderson Darling test provided it with a rank of five and the Kolmogorov Smirnov and Chi-Squared test each provided a rank of six.

The General Extreme Value probability distribution, fairs relatively poorly compared with the above mentioned probability distributions. When fitted to the Euro data, the General Extreme Value probability distribution ranked tenth and twenty-seventh respectively by the Kolmogorov Smirnov and Anderson Darling tests. The Chi-Squared test did not provide a significant ranking. The parameters for the General Extreme Value distribution are $k = -0.34775$, $\sigma = 0.00585$, and $\mu = -0.00178$. For the Japanese Yen time frame, the General Extreme Value distribution likewise underperformed the above mentioned distributions. As was the case with the Euro data, the Kolmogorov Smirnov test ranked this distribution tenth, but the Anderson Darling test showed a slight improvement with a ranking of twenty-five instead of twenty-seventh for the Euro data.

An initial impression is that under *ceteris paribus* conditions the four parameter distributions would provide a better fit of these data than would the distributions with fewer parameters. In general, this study finds conflicting evidence. For the Euro data ten four parameter distributions provide significant results. However, the Error distribution, a three parameter distribution is ranked second and third respectively by the Anderson Darling and the Chi-Squared distributions respectively and fifth by the Kolmogorov Smirnov distribution. The Error distribution did not fit the Japanese data sample as well as it did the Euro sample. The Anderson Darling test ranks it fifth; while the Kolmogorov Smirnov and Chi-Squared provide it a slightly lower rank of six. Although it is a three parameter distribution, the General Logistic distribution, as mentioned above, performed relatively well for both data sets in this study. In this respect one cannot say that a four parameter distribution has a decided advantage with respect to distributions characterized by fewer parameters.

Given the conflicts in the rankings by the different tests and even between the samples it seems that prudent risk analysts and risk managers should subject their data of interest to a number of different probability distributions and goodness of fit tests to ascertain the shape of the distribution, how well the respective probability distributions fit the data, and the respective parameter values. Armed with this information assessments with respect to the value at risk (VaR), expected shortfall, or other risk metrics can be made.

Summary, Conclusions, and Implications

The agenda of this paper is to explore a number of probability distributions with respect to their ability to accurately describe selected financial data. Financial analysts, and risk managers frequently utilize some but ignore many, of these frequency distributions in their professional responsibilities to measure and manage risk exposures resulting from their trading activities and financial decisions. In this study we utilize Euro and Japanese Yen exchange rate data, for a randomly selected time period, converted to percentage changes in order to simulate risk exposures experienced by currency traders, trading desks, and ultimately their respective financial institutions. It is a common practice to measure the volatility of financial time series data in this manner, and to use the resulting volatility as a measure of risk exposure.

The results of our findings indicate one should not assume that a given probability distribution can consistently outperform all other probability distributions. Rather, our findings indicate that the analyst should routinely test different distributions in order to ascertain the one(s) that provide the best fit of the data rather than relying on preconceived favorites. However, when goodness of fit tests provide conflicting results, analysts are most likely to give more weight to the one they have the most confidence in. That is, the one that has proven to best meet their needs in the past.

The main implication that can be gathered from this study is that an analyst may find some less known probability distributions that provide a better fit for their data than the ones they have been using in the past. One should remain open to probability density distributions that are not found in popular usage. Also, it is possible that a given distribution may provide the best fit for a given time period, but not for another time period. Events may change the data distribution in some manner, and for some reason, and the favored probability distribution is incapable of providing as good of a fit as was the case in the past.

Appendix A

Euro Data Test Results:

Continuous Probability Distributions and Parameters

Burr: $K = 1.5357$; $\alpha = 26.689$; $\beta = 0.09974$; $\Upsilon = -0.0974$

Error: $k = 1.2991$; $\sigma = 0.00587$; $\mu = 5.0163E-5$

Gen. Ext. Value: $k = -0.34775$; $\sigma = 0.00585$; $\mu = -0.00178$

General Logistic: $k = -0.03505$; $\sigma = 0.0032$; $\mu = 2.3505E-4$

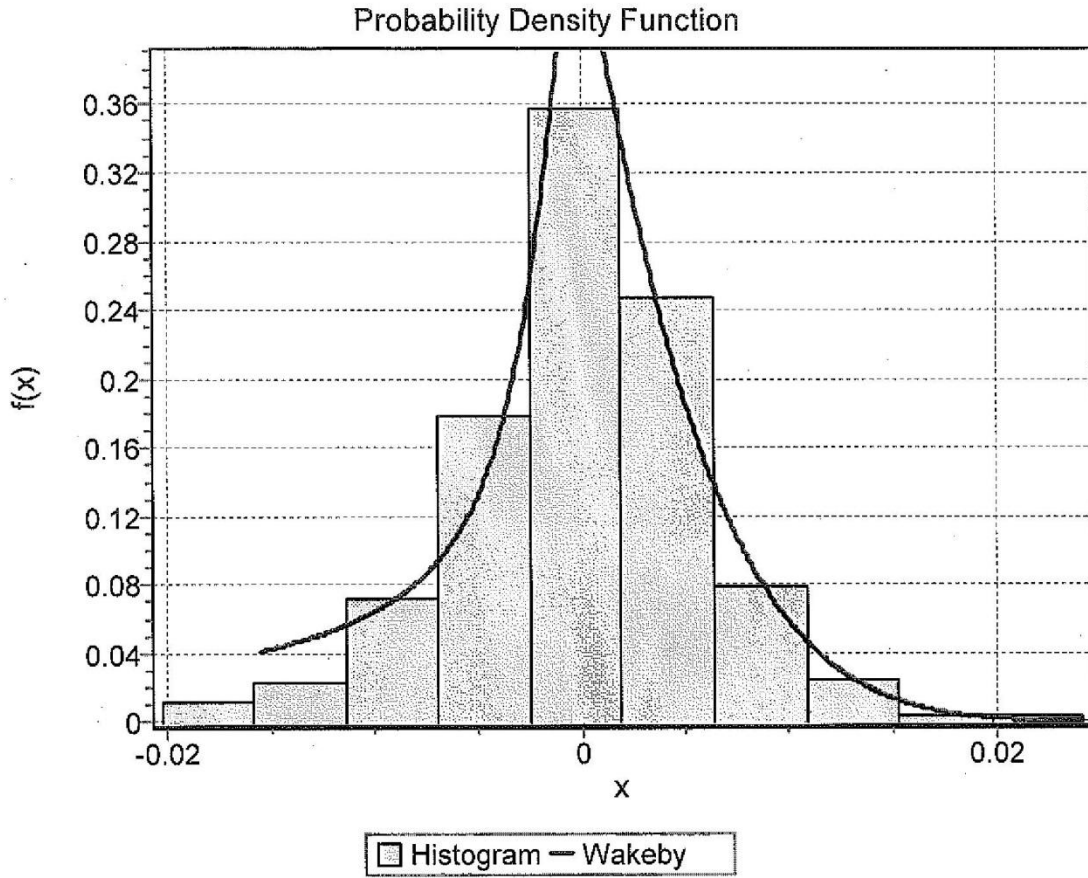
Wakeby: $\alpha = 0.10211$; $\beta = 8.2744$; $\Upsilon = 0.00527$; $\sigma = -0.14747$; $\xi = -0.01555$

Test Rankings: Chi-Squared	Kolmogorov Smirnov	Anderson Darling
-------------------------------	--------------------	------------------

Distributions

Burr	4	3	4
Error	5	2	3
Gen. Extreme Value	10	27	N/A
General Logistic	2	1	1
Wakeby	1	28	N/A

Euro Data



Appendix B

Japanese Yen Data Test Results:

Continuous Probability Distributions and Parameters

Burr: $k = 0.86077$; $\alpha = 58.252$; $\beta = 0.17406$; $\gamma = -0.17457$

Error: $k = 1.0$; $\sigma = 0.00609$; $\mu = 3.1150E-4$

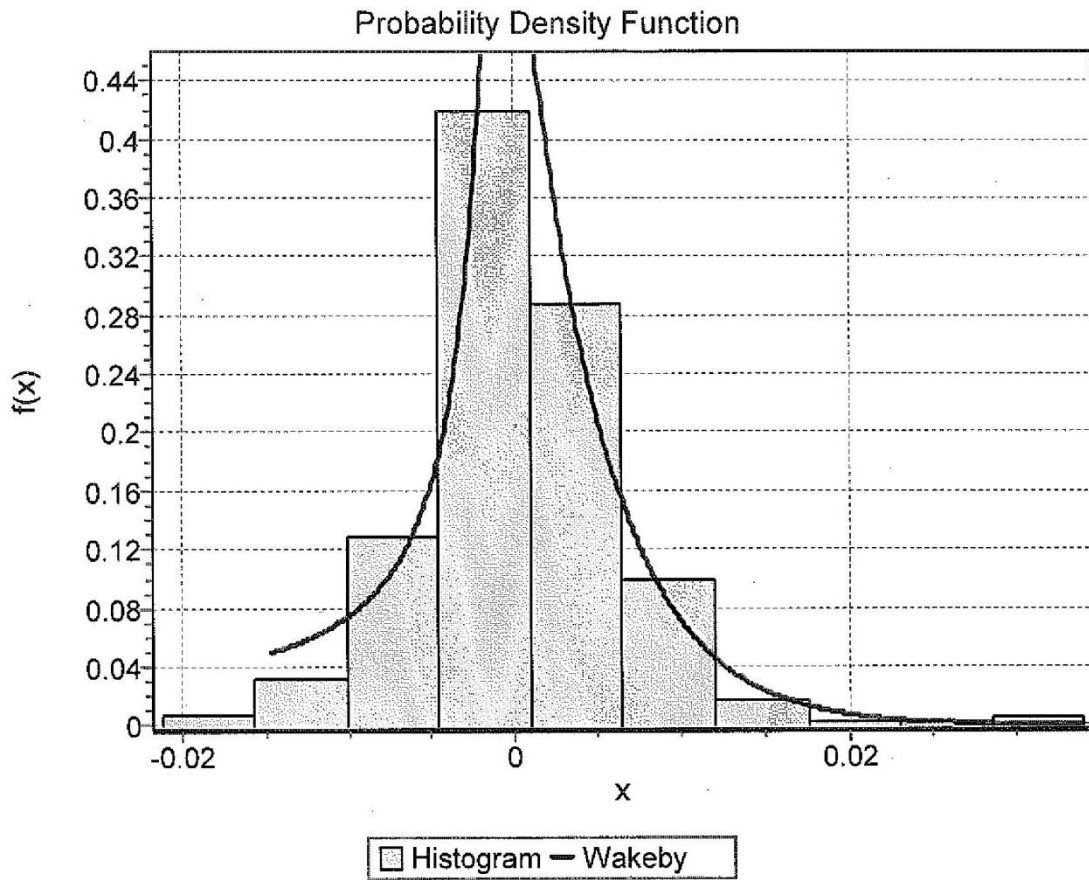
Gen. Ext. Value: $k = -0.21646$; $\sigma = 0.00548$; $\mu = -0.00186$

General Logistic: $k = 0.03813$; $\sigma = 0.00321$; $\mu = 1.0963E-4$

Wakeby: $\alpha = 0.10588$; $\beta = 9.2898$; $\gamma = 0.00484$; $\sigma = -0.03169$; $\xi = -0.01467$

Test Rankings: Chi-Squared	Kolmogorov Smirnov	Anderson Darling	
Distributions			
Burr	2	1	4
Error:	6	5	6
Gen. Ext. Value:	10	25	N/A
General Logistic	4	4	2
Wakeby	1	26	N/A

Japanese Yen Data



References

Aragones, Enriqueta; Thomas R. Palfrey, (2002), “Mixed Equilibrium in a Downsian Model with a Favored Candidate.” *Journal of Economic Theory*, Elsevier, Vol. 103 (1) pages 131-161, March.

Ashkar, Fahim; Smail Mahdi (2006), “Fitting the Log-logistic Distribution by Generalized Moments,” *Journal of Hydrology* **328** (3-4): 694-703.

Bennett, Steve (1983), “Log-Logistic Regression Models for Survival Data”, *Journal of the Royal Statistical Society, Series C* **32** (2): 165-171.

Elghaly, A. A. A., A. M. Abd-Elfattah and S.M. Assar, (Expected Experiment Times for Burr Type II Distributions Under Progressive Centering With Random Removals”, *InterstatJournals.net* (2008).

Embrechts, P., C. Kluppelberg, and T. Mikosch. *Modeling External Events for Insurance and Finance*. New York: Springer, 1997.

Gnedenko, D. V. “Sur la Distribution Limite du Term d’une serie aleatoire,” *Ann. Math.* 44 (1943): 423-453.

Griffiths, George A. “A Theoretically Based Wakeby Distribution for Annual Series”, *Hydrological*

Sciences Journal – des Sciences Hydrologiques, 34, 3, 6, 1989.

Hull, John C., *Risk Management and Financial Institutions*. Hoboken, New Jersey, John Wiley and Sons, 2012.

Rosenberg, J.V., and T. Schuermann, “ A General Approach to Integrated Risk Management with Skewed, Fat-Tailed Risks,” Federal Reserve Bank of New York, Staff Report no.185, May 2004.

Tadikamalla, Pandu R; Norman L. Johnson (1982), “Systems of Frequency Curves Generated by Transformations of Logistic Variables,” *Biometrika*, **69** (2): 461-465.

Tadikamalla, Pandu R. (1980) “A Look at the Burr and Related Distributions,” *International Statistical Review* **48** (3) : 337-344.

Wu, J.W. and H.Y. Yu. “Statistical Inference and the Shape Parameter of the Burr Type XII Distribution Under Failure-Censored Sampling Plan.” *Applied Mathematics and Computation*, Vol. 163, No.1 pp.443-482.

Zimmer, W.J., J. B. Keats and F.K. Wang, (1998). “The Burr XII Distribution in Reliability Analysis,” *Journal of Quality Technology*. Vol. 30, 386-394.

Optimal Tariff and Environmental Tax under Mixed Oligopoly

Abstract:

In a three country – one good mixed oligopoly model with local pollution we investigate the effects of privatization in home country on tariffs and environmental taxes. Results are compared with those obtained in the literature. We show that although privatization raises tariffs in all three countries environmental taxes remain unchanged in foreign countries.

Key Words: Mixed oligopoly, Environmental tax, Tariff

JEL Classification Number: L 33, Q28

Mixed Oligopoly, Trade and Environment

Introduction

The literature on strategic environmental policy has analyzed the impact of trade liberalization on environment and welfare to show that free trade and environmental policy may not be mutually compatible (see Antweiler et al (2001), Bakshi and Roychowdhury (2008), Barrett (1994), Burguet and Sempere (2003), Kennedy (1994), Tanguay (2001), Ulph (1996), Walz and Wellisch (1997)). Authors such as Barrett (1994) and Kennedy (1994) have found that trade liberalization will lead to a lower than efficient tax which is equal to marginal damage. In the absence of tariff governments have an incentive to use environmental tax as a rent extracting instrument. Lower tax leads to higher output and profit. In other words, by lowering tax environmental policy is used as a substitute for trade policy to provide domestic firms a competitive advantage. While Tanguay (2001) has shown that free trade may lead to lower tax and lower welfare Burguet and Sempere (2003) have shown that tax and welfare may increase under certain conditions. Although a bilateral reduction in tariff and raises output and profit it also raised the level of environmental damage. This reduces the incentive to use environmental policy strategically to gain competitive advantage and increases incentive for higher environmental protection. On the other hand, lower tariff revenue makes import less attractive and export more attractive and thus reduces the incentive for environmental protection. The effect on environmental tax depends on these two opposite effects. As Burguet and Sempere (2003) have shown, either of these effects can dominate. As global move towards free trade has gained momentum in recent years several authors have extended the literature on strategic environmental policy by incorporating public enterprise to analyze the effect of privatization of public enterprise on trade and environmental policies (see Barcena-Ruiz and Garzon (2006), Fjeill and Pal (1996), Ohori (2004) Serizawa (2000)). Barcena-Ruiz and Garzon (2006) and Ohori (2004), using a mixed oligopoly model with one public and one private firm, have shown that although environmental tax is lower than

marginal damage regardless of whether public firm is privatized or not, privatization raises both tax and tariff. Moreover, while Ohori (2004) has shown that privatization raises marginal damage and lowers welfare, Barcena-Ruiz and Garzon (2006) have shown that welfare may increase under privatization. On the one hand, although government has an incentive to protect the environment by stricter environmental law (i.e, higher tax), it has, on the other hand, has an incentive to protect newly privatized firms by lowering tax and thus raising output and profit.

The purpose of the paper is to extend the mixed oligopoly model by introducing a third country to analyze the effect of privatization on environmental and trade policies. In particular, we seek to investigate the effect of privatization of public firm on environmental taxes and tariffs.

The paper is organized as follows. In the second section, we present the basic model with two private firms and a public firm. In the third section, we derive optimum tariffs and taxes and compare them with those obtained in the literature. In the last section, we provide some concluding remarks.

2. The Model:

We consider a reciprocal dumping model of trade (see Brander and Krugman (1983) and Brander and Spencer (1985), Ohori (2004)) with three firms located in three countries, Home (1), Foreign (2) and Rest of the world (3). Without loss generality, we assume that firm 1 is a publicly owned firm. Each firm sells in all three countries. Brander and Krugman (1983) have shown that rivalry among oligopolistic firms may lead to dumping where each firm perceives each country as a separate market and makes separate quantity decision for each. This is an extension of “segmented market” argument made by Helpman (1982). In each country, the demand for the good is given by an inverse demand function,

$P_j = A_j - \sum_i q_j^i$, $i, j = 1, 2, 3$, where P_j represents price in j th market and q_j^i represents output sold by firm i in j th market. Finally, A_j represents “choke price” or the intercept of the demand function.

In each country government maximizes welfare by choosing environmental tax, e^i , and import tariff, t^i , $i = 1, 2, 3$. We assume that d_i for $i = 1, 2, 3$, represents damage caused by pollution emitted by each unit of output. Note that we only consider local pollution. Trans-boundary pollution has been considered by Tanguay (2001) and Bakshi and Roychowdhury (2008). We simplify the analysis by assuming constant and identical marginal costs and marginal damages in all three countries. That is,

$c_i = c$ and $d_i = d$ for $i = 1, 2, 3$.

We also assume that $(A_j - c - d) > 0$ and $A_j = A$ for $j = 1, 2, 3$. Following the literature on both PTA and strategic environmental policy (see Burguet and Sempere (2003), Hamilton and Requet (2004), Krishna (1998), Ohori (2004), Tanguay (2001)), we consider a two-stage game. In the first stage governments maximize welfare to choose tariffs, and environmental taxes. In the second stage, public firm (firm 1) maximizes welfare, w_1 , and firms 2 and 3 maximize profits, π_i , for $i = 2, 3$ to choose output.

3. Optimal Tariff and Tax under Mixed Oligopoly:

We let cs_i, TR_i, dQ^i and e_iQ^i represent consumer surplus, tariff revenue, total damage and tax revenue respectively in country $i, i = 1, 2, 3$. Firm1, the public firm, chooses q_j^1 for $j=1, 2, 3$ by maximizing w_1 where, for $i = 1, 2, 3$, $w_i = cs_i + \pi_i + TR_i - dQ^i + e_iQ^i$, $cs_i = [2A - Q^i] \frac{Q^i}{2}$, $\pi_i = (A - Q_1)q_1^i + (A - Q_2)q_2^i + (A - Q_3)q_3^i - cQ^i - e_iQ^i - t_2q_2^i - t_3q_3^i$ and $TR_i = t_i(q_i^2 + q_i^3)$. (1)

First order conditions yield:

$$q_1^1 = A - c - d$$

$$q_2^1 = \frac{1}{4}(A - c - 3d - 2t_2 + e_2 + e_3)$$

$$q_3^1 = \frac{1}{4}(A - c - 3d - 2t_3 + e_2 + e_3)$$

(2)

Firms 2 and 3 maximize π_2 and π_3 respectively to choose $q_j^i, i=2,3$ and $j=1, 2, 3$. The first order conditions yield:

$$q_1^2 = \frac{1}{3}(d - t_1 - 2e_2 + e_3)$$

$$q_2^2 = \frac{1}{4}(A - c + d + 2t_2 - 3e_2 + e_3)$$

$$q_3^2 = \frac{1}{4}(A - c + d - 2t_3 - 3e_2 + e_3)$$

(3)

$$q_1^3 = \frac{1}{3}(d - t_1 - 2e_3 + e_2)$$

$$q_2^3 = \frac{1}{4}(A - c + d - 2t_2 + e_2 - 3e_3)$$

$$q_3^3 = \frac{1}{4}(A - c + d + 2t_3 + e_2 - 3e_3)$$

From (2), it is clear that firm 1's output is independent of its own tax and tariff. However, output produced by firms 2 and 3 depend on both domestic and foreign taxes and tariffs. Furthermore, from (2) and (3), it follows that import tariffs reduces import and boosts sales of domestic firms. Using (2) and (3) we can derive total output sold in country i, Q_i , and output produced in country $i, Q^i, i = 1, 2, 3$, where $Q_i = \sum_j q_i^j$ and $Q^i = \sum_j q_j^i$ for $i, j = 1, 2, 3$.

$$Q_1 = A - c + \frac{1}{3}d - \frac{2}{3}t_1 - \frac{1}{3}(e_2 + e_3)$$

$$Q_2 = \frac{1}{4}(3A - 3c - d - 2t_2 - e_2 - e_3)$$

$$Q_3 = \frac{1}{4}(3A - 3c - d - 2t_3 - e_2 - e_3)$$

$$Q^1 = \frac{1}{2}(3A - 3c - 3d - t_2 - t_3 + e_2 + e_3) \quad (4)$$

$$Q^2 = \frac{1}{6}(3A - 3c + 5d - 2t_1 + 3t_2 - 3t_3 - 13e_2 + 5e_3)$$

$$Q^3 = \frac{1}{6}(3A - 3c + 5d - 2t_1 - 3t_2 + 3t_3 + 5e_2 - 13e_3)$$

From (4), we observe that tariff lowers output sold in all the countries. Tariff boosts domestic production and lowers import. It is clear from (4) that “import effect” is stronger than “production effect”. Note that total output produced in country 1 is independent of tariff imposed by country 1. Therefore “output effect is absent in country 1. Entire decline in sale can be explained by reduction in import from countries 1 and 2. It seems that foreign environmental tax raises domestic production. From (2), (3) and (4), it is clear that tax lowers domestic output and raises import. This implies that foreign firms have an incentive to produce more in the face of a higher tax at home. Again, for country 1 domestic tax plays no role.

Next, we derive optimal tariffs and taxes. Country 1 maximizes welfare, W_1 to choose t_1 and countries 2 and 3 maximize W_2 and W_3 to choose t_2, t_3, e_2 and e_3 . First order conditions yield, after using (2) and (3), the following solutions:

$$t_1 = 0.046875(A - c - d) - 0.1198c$$

$$t_2 = t_3 = 0.2625(A - c - d)$$

$$e_2 = e_3 = d - 0.1875(A - c - d) \quad (5)$$

Substituting optimum taxes and tariffs in (2), (3) and (4) we get,

$$q_1^1 = (A - c - d)$$

$$q_2^1 = q_3^1 = 0.025(A - c - d)$$

$$q_1^2 = q_1^3 = \frac{1}{3}[0.140625(A - c - d) - 0.09375c]$$

$$q_2^2 = q_2^3 = q_3^2 = q_3^3 = 0.2125(A - c - d) \quad (6)$$

$$Q^1 = 1.025(A - c - d)$$

$$Q_1 = 0.30625(A - c - d) - 0.0625c$$

$$Q^2 = Q^3 = 0.471875(A - c - d) - 0.03125c$$

$$Q_2 = Q_3 = 0.45(A - c - d)$$

From (5), it is clear that $t_1 < t_i$ for $i = 2, 3$. Since country 1 maximizes welfare in both stages it has a stronger preference for import than countries 2 and 3. In the absence of trans-boundary pollution, import does not cause environmental damage. Note higher (resp. lower) marginal damage lowers (resp. raises) tariffs and raises (resp. lowers) tax. Higher marginal damage makes import relatively more attractive and domestic production relatively less attractive. Therefore, government has an incentive to encourage import by lowering tariff and discourage domestic production by raising environmental tax. Finally, note that optimal tax is below the efficient level which equals the marginal damage. This is consistent with the literature on both strategic environmental policy and strategic environmental policy with mixed oligopoly (see Ohori (2004), Barrett (1994), Kennedy (1994)). This is what is known as “rent shifting” effect. Government has an incentive to use environmental tax to extract economic rent and give domestic industry competitive advantage. The presence of a public firm and an additional firm does not change the result obtained in the literature on strategic environmental policy (see Barrett (1994), Kennedy (1994)).

It will be interesting to analyze the impact of privatization on tariff and tax. If firm 1 is privatized, it also maximizes profit like firms 2 and 3. This becomes a three firm oligopoly model where governments maximize welfare to choose taxes and tariffs in the first stage. In the second stage, given optimum tariffs and taxes firms maximize profits to choose output. The optimum tariffs, taxes and output are as follows (for detailed derivation see Dasgupta and Lee(2012)): for $i, j = 1, 2, 3$,

$$t_i = 0.28125(A - c - d)$$

$$e_i = d - 0.1875(A - c - d)$$

$$q_i^i = 0.4375(A - c - d)$$

$$q_j^i = 0.15625(A - c - d)$$

$$Q_i = Q^i = 0.75(A - c - d) \tag{7}$$

Comparing (7) with (5) we find that optimal environmental taxes remain lower than marginal damage. This result is consistent with results obtained in the literature (see Ohori (2004)). This indicates that government continues to have an incentive to use environmental tax as a rent-shifting instrument. Furthermore, we find that privatization raises tariff across the board. This is consistent with the literature on mixed oligopoly (see Ohori (2004) and Barcena-Ruiz and Garzon (2006)). This implies that home country has an incentive to protect the newly privatized firm by raising tariff. It appears that the presence of third country does not change the result obtained in the literature (see Ohori (2004) and Barcena-Ruiz and Garzon (2006)). However, although Ohori (2004) and Barcena-Ruiz and Garzon (2006) predicts a higher environmental tax after privatization, it is clear from (7) and (5) that for countries 2 and 3 environmental taxes do not change. In other words, regardless of whether home country privatizes its firm or not environmental policies for countries 2 and 3 remain unchanged.

4. Conclusion

We have extended the traditional mixed oligopoly model by introducing a third country and analyzed the effect of privatization on tariffs and environmental taxes. We have shown that privatization raises tariffs in all three countries. This result is consistent with those obtained in the literature on mixed oligopoly (see Ohori (2004) and Barcena-Ruiz and Garzon (2006)). However, our results on the effects of privatization on environmental taxes differ from those obtained in the literature. Although literature on mixed oligopoly predicts that privatization will lead to higher environmental taxes, we show that environmental taxes will remain unchanged even after privatization.

References:

1. Antweiler, W, B.R. Copeland and M. S. Taylor. "Is Free Trade Good for Environment?" *American Economic Review*, 2001, Vol. 91, 877 – 908.
2. Bakshi, Soham and Amrita Ray Chowdhury. "Trans-boundary Pollution, Trade Liberalization and Environmental Taxes" Mimeographed. 2008. Tilburg University.
3. Barcena-Ruiz, Juan Carlos and Maria Garzon. "Mixed Oligopoly and Environmental Policy" *Spanish Economic Review*, 2006, Vol. 8, 139 – 160.
4. Barrett, S. "Strategic Environmental Policy and International Trade" *Journal of Public Economics*, 1994, Vol. 54, 325 – 338.
5. Brander, J and P. Krugman. "A Reciprocal Dumping Model of International Trade" *Journal of International Economics*, 1983, Vol. 17, 313 – 321.
6. Burguet, R and J. Sempere. "Trade Liberalization, Environmental Policy and Welfare" *Journal of Environmental Economics*, 2003, Vol.46, 25 – 37.
7. Dasgupta, M and S.D. Lee. "Free Trade Areas, Welfare and Strategic Environmental Policy" *Journal of Business and Economic Perspectives*, 2012, Vol. 39, 118 – 127.
8. Fjell, K and D. Pal. "A Mixed Oligopoly in the presence of Foreign Private Firms" *Canadian Journal of Economics*, 1996, Vol. 29, 737 – 743.
9. Gordon, R. H and A. L. Bovenberg. "Why Capital is so Immobile Internationally? Possible Explanation and Implication for Capital Income Taxation." *American Economic Review*, Vol. 86, 1057 – 1075.
10. Hamilton, S and T. Requate. "Vertical Structure and Strategic Environmental Policy" *Journal of Environmental Policy and Management*, 2004, Vol. 47, 260 – 269.
11. Kennedy, P. W. "Equilibrium Pollution Taxes in Open Economies with Imperfect Competition", *Journal of Environmental Economics and Management*, 1994, Vol. 27, 49 – 63.

12. Ohori, Shuichi. “Environmental Tax, Trade and Privatization” *The Kyoto Economic Review*, 2004, 73, 109 -120.
13. Serizawa, N. “Optimal Trade Policy in an International Mixed Oligopoly” *Seoul Journal of Economics*, 2000, Vol. 13, 107 – 122
14. Tanguay, G. “Strategic Environmental Policies under International Duopolistic Competition”, *International Tax and Public Finance*, 2001, Vol.8, 793 – 811.
15. Walz, U and D. Wellisch. “Is Free Trade in the Interest of Exporting Countries when there is Ecological Dumping?”, *Journal of Public Economics*, 1997, Vol. 66, 275 – 291.

The Effect of Problem-Based, Experiential Learning on Undergraduate Business Students

Elizabeth Rich, Athens State University

Tina Sloan, Athens State University

Bryan Kennedy, Athens State University

Susan Calhoun, Athens State University

Abstract

To introduce undergraduate business students to integrated business process concepts in an experiential and engaging way, a learning activity was created using Mr. Potato HeadTM. The exercise was included as a three-hour lab activity in a semester-long management class and allowed students to interact with one another in a simulated manufacturing environment. By building Mr. Potato Head to customer specifications, students learned about a basic production process through cooperation and problem solving. The purpose of this study was to investigate the effects of problem-based, experiential activities on students' understanding and enjoyment of learning. In this paper, we outline the process through which we engaged the students, conducted the production process experiment, and confirmed our hypotheses using pre- and posttests, and qualitative analysis of student evaluations of this learning activity.

Introduction

Learner-centered approaches have been linked to increased student learning, higher graduation rates, and enjoyment of course content (Kuh, 2001; Pollard & Duvall, 2006; Schmidt, Cohen-Schotanus, & Arends, 2009; Strobd & Van Barneveld, 2009). Thus, educators often advocate the use of cooperative, experiential, hands-on, problem-based, constructivist, and other learner-centered methods to ensure students' active engagement in the learning process (Chickering & Gamson, 1987; Savin-Baden, 2000; Weimer, 2002). In spite of these research findings, many college professors primarily use traditional lecture-based techniques to disseminate information to students. Therefore, college classrooms often remain teacher-centered as opposed to learner-centered.

As a response to this issue, a number of research studies have investigated the pedagogy of learner-centered teaching within higher education. Pollard and Duvall (2006) reported cooperative learning, peer instruction, and team games led to a deeper understanding of course content among students enrolled in an undergraduate computer science class. Likewise, Reynolds and Hancock (2010) reported positive gains in problem-solving skills and achievement among university students enrolled in a problem-based learning environmental biotechnology course which emphasized finding solutions to real-world problems based on course content through cooperative learning structures. Similarly, college students participating in an experiential approach to learning Enterprise Resource Planning (ERP) indicated, through a self-assessment, the hands-on techniques were positive and beneficial to their comprehension of business process integration (Rienzo & Han, 2010). Findings from Kirkham and Seymour (2005), utilizing a live ERP system, also supported previous research related to the role of hands-on experiences in problem-based settings and gains in students' confidence and comprehension of business processes.

Other studies of instructional pedagogy within college settings have reported similar results; thus, the literature suggests support for a paradigm shift from a traditional teacher-centered system to a learner-centered paradigm (Saulnier, Landry, & Wagner, 2008). Sezer (2010) found shifting from teacher-centered to learner-centered instruction within a community college math class was instrumental in strengthening students' conceptual understanding and appreciation for course content. Yadav, Subedi, Lundeberg, and Bunting (2011) also noted students' problem-solving abilities and conceptual understanding of electrical engineering concepts were significantly enhanced with problem-based learning strategies as compared to passive methodology (traditional lectures) among students enrolled in an undergraduate engineering course.

Meta-analyses of the effects of problem-based learning have suggested that students participating in problem-based learning (PBL) environments excel in their application of knowledge and perform better on assessment measures which require students to link myriad concepts (Dochy, Segers, VandenBassche, and Gijbels, 2003). Research of undergraduate nursing students conducted by Gabr and Mohamed (2011) also reported a statistically significant difference with respect to gains in problem-solving skills and increased student motivation among students taught through PBL strategies as compared to their peers who were taught through lecture. Problem-based learning strategies have been shown to enhance additional cognitive measures such as long-term retention in contrast to traditional methods, which were most effective with measures requiring declarative knowledge or short-term memory (Gijbels, Dochy, Bossche, & Segers, 2005; Pollard & Duvall, 2006; Strobd & Van Barneveld, 2009).

In addition to cognitive gains, researchers have reported gains related to affective measures as a result of problem-based learning approaches (Pollard & Duvall, 2006; Reynolds & Hancock, 2010).

Empirical evidence has demonstrated that students enrolled in university courses employing PBL strategies obtained more university course credits and reported higher levels of social and academic integration compared to students enrolled in lecture-based courses (Severin & Schmidt, 2009). Similarly, a study of 13,845 medical students indicated that students who participated in small group, problem-based learning settings needed less time to graduate and reported higher graduation rates than peers taught through traditional means (Schmidt, Cohen-Schotanus, & Arends, 2009). Delialioglu (2011) noted university students' active engagement with academically meaningful activities within a computer networks course was significantly higher during the eight weeks portion of the semester dedicated to problem-based, learner-centered strategies as compared to the eight weeks of lecture-based, teacher-centered strategies. These findings support earlier research literature linking students' levels of active engagement within learner-centered contexts to student satisfaction, application skills, and retention in academic settings (Ginns & Ellis, 2007; Kuh, 2001).

While several pedagogical studies of learner-centered approaches have been conducted within university settings, the current qualitative and quantitative study was designed to further add to the body of knowledge by investigating the effects of problem-based learning on undergraduate students' comprehension and enjoyment of learning subject matter presented within an undergraduate business course (Gijbels, Dochy, Bossche, & Segers, 2005; Kuh, 2001; Pollard & Duvall, 2006; Schmidt, Cohen-Schotanus, & Arends, 2009; Strobd & Van Barneveld, 2009).

Methods

The eight participants in this study consisted of undergraduate business students who were beginning their third year of collegiate study at a mid-sized, southeastern university. A pretest was administered to determine the students' comprehension of what they had read in their textbook about the production process prior to the exercise. The pretest was comprised of 10 multiple-choice questions designed to identify what students' understood about the triggers, data, activities, and documents in a simplified production cycle. Each question had a value of 10 points with four possible answers and only one correct answer. The pretest was scored from 0 to 100 with 0 being the lowest possible score and 100 the highest.

The same test was given to the students immediately following the learning activity. In this one group, pretest-posttest design, the posttest scores were compared to the pretest scores to determine whether there was a statistically significant difference in learning outcomes as a result of the experiential activity. If the subject's score on the posttest was higher than the subject's pretest score, he/she was considered to have learned from the exercise.

A satisfaction survey was administered after the posttest to identify students' preference for learning experientially. The instrument included four multiple-choice questions with only one correct answer and three open-ended discussion questions. Results were used to gather qualitative data about the students' perception of the usefulness of this type of learning activity in an undergraduate business class.

Results

A dependent paired samples t-test was conducted to assess whether there was a significant difference among students' pretest mean and posttest mean scores following an experiential learning activity. The results are shown in Tables 1 and 2. Overall pretest scores ranged from a low of 30 to a high of 80; posttest scores ranged from 50 to 90. Results from the one-tailed t-test indicated a statistically significant gain in achievement based on subjects' pretest ($M=52.50$, $SD= 12.46$) and posttest ($M=71.25$, $SD=18.32$) scores, with $t(7)=3.23$, $p<.01$.

One hundred percent of the participants responded the hands-on exercise positively influenced their learning. When asked how the activity compared to traditional lectures, 75% replied the activity significantly reinforced concepts in the text. Finally, 100% responded they enjoyed the activity.

Open-ended comments from participants showed that they liked the interaction that occurred during the exercise and valued the practical, hands-on approach to learning. Many indicated their understanding was enhanced because of the problem-based method. Students least enjoyed the part of the exercise that required flow-charting to reinforce learning.

Several suggestions for improvement were made, 100% of them involving the supporting documentation that was provided. Students requested that all participants be given all job aids and worksheets so that they could see the roles, responsibilities, and data for the entire process.

Discussion

Research question one sought to determine if there was a significant difference among pre- and posttest scores of undergraduate business students as a result of participation in an experiential,

hands-on learning activity. Quantitative results indicated there was a statistically significant difference among pre-and posttest scores.

Based on the mean increase of 18.75 points between the pretest and posttest scores, it seems reasonable to conclude that the experiential approach was an effective strategy with regard to increased student learning ($p < .01$). The results of the present study support previous findings of gains in comprehension as a result of learner-centered methodology within college settings (Kirkham & Seymour, 2005; Pollar & Duvall, 2006; Reynolds & Hancock, 2010; Rienzo & Han, 2010).

The second research question was qualitative in nature and captured information about business students' enjoyment of learning the subject using an experiential activity. Results showed that all participants enjoyed the hands-on activity a great deal and felt it enhanced their learning.

While the results supported the hypotheses, the study was constrained by the small sample size. It is recommended that to generalize the findings, further studies be conducted with larger samples and participants from different populations such as graduate students and non-business majors.

References

- Albanese M.A. & Mitchell S. (1993). Problem-based learning: A review of literature on its outcomes and implementation issues. *Academic Medicine* 68, 52-81.
- Chickering, A.W. & Gamson, Z.F. (1987). Seven principles for good practice in undergraduate education. *AAHE Bulletin* (March 1987), 3-7.
- Delialioglu, O. (2012). Student engagement in blended learning environments with lecture-based and problem-based instructional approaches. *Educational Technology & Society*, 15(3), 310-322.
- Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D. (2003). Effects of problem-based learning: a meta-analysis. *Learning and Instruction*, 13, 533-568.
- Gijbels, D., Dochy, F, Van den Bossche, P., & Segers, M. (2005). Effects of problem-based learning: A meta-analysis from the angle of assessment. *Review of Educational Research*, 75 (1), 27-61.
- Ginns, P., & Ellis, R. (2007). Quality in blended learning: Exploring the relationships between on-line and face-to-face teaching and learning. *The Internet and Higher Education*, 10(1), 53-64.
- Kirkham, K. & Seymour, L. (2005). The value of teaching using a live ERP System with resource constraints, WorldConference on Computers in Education (WCCE), Cape Town.
- Kuh, G.D. (2001). Assessing what really matters to student learning: Inside the National Survey of Student Engagement. *Change*, 33(3), 10-17, 66.
- Pollard, S., & Duvall, R. C. (2006). Everything I needed to know about teaching I learned in kindergarten: Bringing elementary education techniques to undergraduate computer science classes. *SIGCSE Bulletin*, 38(1), 224-228.

- Reynolds, M. J., & Hancock, D. R. (2010). Problem-based learning in a higher education environmental biotechnology course. *Innovations in Education & Teaching International*, 47(2), 175–186.
- Rienzo, T., & Han, B. (2010). Learning business process integration: Step by step is only the first step. *Decision Line*, 41(2).
- Savin-Baden, M. (2000). Facilitating problem-based learning: The impact of tutors' pedagogical stances. *Journal on Excellence in College Teaching*, 11(2/3), 97-111.
- Saulnier, B. M., Landry, J. P. Wagner, T. A., Longenecker, H. E. (2008). From teaching to learning: Learner-centered teaching and assessment in information systems education. *Journal of Information Systems Education*, 19 (2), 169-174.
- Schmidt, H.G., Cohen-Schotanus, J., & Arends, L.R. (2009). Impact of problem-based, active learning in graduation rates for 10 generations of Dutch medical students. *Medical Education*, 43 (3), 211–218.
- Sezer, R. (2010). Pulling out all the stops. *Education*, 130(3), 416-423.
- Severiens, S. E., & Schmidt, H. G. (2009). Academic and social integration and study progress in problem based learning. *Higher Education*, 48, 59-69.
- Strobel, J., & van Barneveld, A. (2009). When is PBL more effective? A meta-synthesis of meta-analyses comparing PBL to conventional classrooms. *Interdisciplinary Journal of Problem-Based Learning*, 3(1), 44–58.
- Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. San Francisco, CA: Jossey-Bass.

Yadav, A., Subedi D., Lundeberg, M. A., & Bunting, C. F. (2011). Problem-based learning: Influence on students' learning in an electrical engineering course. *Journal of Engineering Education*, 100(2), 253-280.

Tables

Table 1: Paired Samples Statistics

	Minimum	Maximum	Mean	N	Std. Deviation	Std. Error Mean
Posttest	50	90	71.25	8	12.46	4.41
Pretest	30	80	52.50	8	18.32	6.48

Table 2: Paired Samples t-Test

Paired Differences				95% Confidence Interval of the Difference			
	Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	Sig. (one-tailed)
Pair 1 Posttest- Pretest	18.75	16.42	5.81	5.02	32.48	3.23	.007

Exploring the Mechanisms and Processes of Authentic Leaders: A Multi-level Qualitative Examination of Leaders and Followers

Abstract

In the face of ethical meltdowns, financial crises and global recessions, organizational functioning in the world has become even more complex, challenging, and constantly shifting. Authentic leadership has increasingly gained widespread attention as a promising resolution for the perceived need for organizational leaders to break away from traditional paradigms of management and institutionalize exemplary leadership standards for others to follow. It is postulated authenticity responds to the call for innovative leadership and offers contemporary organizations an antipodean paradigm concentrated on cultivating an astute workforce that is ethical, proficient, and follower focused. However, there is paucity in the literature to substantiate these claims and this research attempts to fill the knowledge gap. This qualitative study explores core characteristics, values, attributes and/or traits of authentic leaders, and investigates the processes, behaviors and mechanisms for developing authentically. The theoretical foundation builds on the work of Avolio and Gardner (2005), Walumbwa, Avolio, Gardner, Wernsing and Peterson (2008), Shamir and Eilam (2005), and others. Research questions are answered through in-depth, unstructured interviews by a deliberate convenience sample of seven senior leaders from various business sectors. Data were analyzed using NVivo 10 software and deduced through the methodological configuration of Hycner (1985). The study finds authentic leaders are transparent individuals who are governed by their personal convictions (and not outside influences) which are derived from spiritual and family values grounded in openness, fairness, truth and honesty. Implications for future research is discussed.

Introduction

According to Avolio and Gardner (2005, p. 316) leadership is traditionally more difficult in challenging times, but the “unique stressors facing organizations throughout the world today call for a renewed focus on what constitutes genuine leadership”. All types of organizations, public, private, even volunteer, are addressing challenges that run the full gamut from ethical meltdowns to terrorism, including bio-terrorism (e.g., SARS) (Avolio & Gardner, 2005). Advancing the work of Lawrence and Nohria (2002), Bjugstad, Thach, Thompson and Morris (2006) direct thoughtfulness to the imperative need for organizations of all types to cultivate a perceptive workforce in order to be competitive in the future. In doing so, Roche (2010) appraises the significance of “meaning, authenticity and being ‘real’ in leadership” (as cited in Vella-Brodrick & Page, 2009), is characterized by personnel which is essentially crucial to the organization’s ability to operate in the uncertain and shifting times of today (p. 71). As the cost of intellectual capital continues to rise steeply, Bjugstad et al. (2006) caution contemporary organizations must have an ample supply of talented followers

(as cited in Citrin, 2002). Toor and Ofori (2008, p. 621) purport authentic leaders are able to see widely and deeply enough to break away from the “conventional paradigm of management and set exemplary standards for others to follow”.

The authentic leader is described as possessing keen self-knowledge or level of self-awareness, as well as a subjective viewpoint that reflects transparency into their principles, opinions and belief system (Shamir & Eilam, 2005). According to former Medtronic CEO Bill George authentic leaders cultivate a self-concept which involves attending to the personal clarity and convictions needed to develop an authentic meaning system (George, 2003). The literature speculates authentic leaders allude to higher moral and ethical purposes for the betterment of their followers and possess constructive and continuous self-development characteristics (Bhindi, Riley, Smith & Hanson, 2008). Perhaps these are derived from the underlying assumption in the literature that authenticity is informed by openness and revelation of a self that is true (Avolio & Gardner, 2005). Self-awareness is theorized as being key to authenticity (Avolio et al., 2004) and thus, Avolio and Gardner (2005) hypothesize a new classification for authentic leadership as the “‘root’ informing construct of all new positive forms of leadership, including transformational, charismatic, servant and spiritual leadership” (Ladkin & Taylor, 2010, p. 65). Furthermore, it is also predicted that followers will have a higher trust in the leader when they observe the leader’s high commitment to transparent decision-making, expression of core values and relational openness (Avolio et al., 2004).

Statement of the Problem

Dychtwald, Erickson and Morrison (2006) apprise in the face of ethical failures, financial crises, and global recessions the normal range of organizational functioning in the business world is multifaceted, perplexing, and unstable. Advancing the research of Avolio and Gardner (2005), Dychtwald et al. (2006), and Erickson (2009), Roche (2010) suggests some of the great challenges for contemporary business environments involve technologies and capabilities, market demands, job related conflicts, skill shortages, and competition. To add to the complexity of operational concerns, Toor and Ofori (2008, p. 621) posit recent nonprofit and government corruption, the colossal failure in the banking system, and numerous ethical corporate scandals, described by George (2003) as illustrations of administrative malfeasance, have left uncomplimentary impressions about leaders and leadership authenticity. Specifically, the incidents at Enron, WorldCom, Arthur Andersen, and Adelphia, to name a few, have led to a societal inquisitorial distrust of top leadership (George, 2003; Bjugstad et al., 2006).

George (2003) offers distinctive acknowledgements to Enron and Arthur Andersen and explicates the infiltration of their misconduct traumatized the world into a reality that organizations were being directed toward self-destruction. Although regulators, controllers, and lawmakers have since crafted codes of practice to close loopholes, George (2003) asserts improved integrity, stewardship and sound governance are deeper issues that must be addressed by leaders themselves. With a shift in focus to accountability, Toor and Ofori (2008) affirm an imperative call for effective authentic leadership propagates a kind of behavior that embraces practical and realistic performance standards, moral and ethical

leadership, and a followership development process that influences positive follower and organizational achievements. In addition to generating profits and positive outcomes, Walumbwa et al. (2008) advise this supplication calls organizations to incorporate integrity, morality and transparency into their culture and as part of their bottom line. Sharing these concerns, Luthans and Avolio (2003, p. 244) purport “a need for a theory-driven model identifying the specific construct variables and relationships that can guide authentic leader development and suggest researchable propositions” and henceforth, introduce the initial model for this purpose.

While Bjugstad et al. (2006) assert organizational mergers, acquisitions and downsizing have additionally accounted for more skepticism in the workplace, Maccoby (2004, p. 79) hypothesizes “the changing structure of families – more single parent homes, dual working parents and so on – have begun to create work environments where people value traditional leaders less”. This, according to Maccoby (2004), suggests principles regarding family dynamics may support reasoning behind the change in how authority figures are now viewed. Despite varying implicit leadership theories, Avolio et al. (2004) contend a tumultuous society can only deliver uncertain and shifting environments to which organizations must seek to operate competently, routinely, and efficiently through a usage of formalized structures and processes that are led by key organizational leaders with high levels of integrity, consistent values, and grounded principles that are manifested through actual behavior.

A synchronized propagation of the literatures has spawned several competing conceptualizations of authentic leadership resulting in confusion about the construct. Cooper, Scandura and Schriesheim (2005) speculate areas of conceptual ambiguity exist (e.g., levels of analysis) and caution scholars to circumvent the pitfalls of advancing prior leadership theories by cautiously describing, quantifying, qualifying and ultimately rigorously examining the construct. Citing the research of Cooper et al. (2005), Ladkin and Taylor (2010) construe “one of the difficulties with the concept from a theoretical perspective is that a unified, agreed definition for authentic leadership does not exist” (p. 65). Referencing the work of George (2003), Luthans and Avolio (2003), Avolio and Gardner (2005), and George and Sims (2007), Toor and Ofori (2008) posit the characteristics of authentic leaders are comprised of “positive energy, high sense of integrity, moral character and self-discipline, clear purpose, concern for others, confidence, hope, optimism, resilience and personal values” (p. 624). With no universally accepted definition compounded by a scarce amount of empirical research, only a few studies have investigated the precursors, consequences, and facilitating circumstances for authentic leadership and even fewer have examined the phenomenon within the environ of the organization (Luthans, Youssef & Avolio, 2007). Luthans et al. (2007) posit the emergence of multiple practitioner and scholarly conceptions of authentic leadership has simply created widespread ambiguity.

Purpose of Study

While the literature purports authentic leadership is complex, undefined, and a philosophy with much fluidity, it is also conjectured as a significant facilitating condition in organizational culture (Gardner et al., 2005). In the face of several theoretical variants,

Luthans et al. (2007, p. 51) do not delineate a process, but simply assert “authenticity development is a personal and dynamic process”. Yukl (2010) purports authentic leaders have “high self-awareness about their values, beliefs, emotions, self-identities, and abilities”, and further suggests their effectiveness stem from innate “motivation, as defined by their energy, persistence, optimism and clarity about objectives in the face of difficult challenges, obstacles, setbacks, and conflicts with rivals or opponent” (p. 424). To this assertion Ladkin and Taylor (2010) contend Yukl (2010) gets the closest to defining the processes required to get through the ‘centrality of embodiment’ and get to the core of ‘one’s true self” (p. 72). However, such deep somatic-type work cannot be a straight- forward process, but rather one that involves self-acknowledgement, balancing, and the resolution of innate paradoxes and tensions that can be manifested in corporeal and unconscious functioning (Ladkin & Taylor, 2010). Ladkin and Taylor (2010) postulate discovering one’s true self situates an individual in a highly exposed state that has “corresponding benefit and difficulties associated with such potential insecurity” (p. 72). With the understanding that authentic leadership is embodied in self- awareness and exposure processes, this study seeks to understand procedures and devices an authentic leader appoints to address issues and concerns relating to morality. It also explores the types of somatic clues and mechanisms the leader utilizes to impact self-awareness, relationships with followers, and achieving organizational goals (Ladkin & Taylor, 2010).

Acknowledging the purview of Adorno (1973), Shamir and Eilam (2005) state a purely subjective concept of authenticity may include instances of ‘honest’ self-delusion in which leaders who believe they were uniquely gifted with distinctive qualities may begin to act accordingly (p. 400). Shamir and Eilam (2005) contend actors with a greater-than-thou mentality has proven dangerous in the past and because of this these researchers have thickened their definition to embrace attributes for authentic leaders as well as the attributes of their relationships with followers. Peterlin, Penger and Dimovski (2009) opine authenticity responds to the call for a new form of leadership that would offer contemporary organizations an antipodean paradigm that concentrates on (a) personalizing competitive advantages for an individual; and (b) developing positive organizational behavior which includes self-esteem, hope, trust, optimism and flexibility. Referring to the research of Gardner and Schermerhorn (2004), Stewart-Wherry (2012) hypothesizes when authentic leaders include, develop, and cultivate followers’ high in-role performance (leader, follower and subsequently, organization), high follower job commitment may result (Stewart-Wherry, 2012).

The literature purports leadership studies acknowledge a growing concern that contemporary leaders are challenged to be self-disciplined, honest, principled, and follower focused. Although there is a postulated problem that contemporary leaders are challenged to become more efficient, principled, and employee focused, a gap in the literature posits silence on identifying the traits, characteristics, behaviors and mechanisms used by authentic leaders. This study examines the characteristics of authentic leaders and the relational maneuvers and influence processes these individuals employ to guide the development of self, identity, perspectives and decision-making in their relationships with followers. The aim of the study is to make a contribution to the field of leadership research on authentic

leadership in the sense that addresses the silence in the literature pertaining to identifying the tools and procedures utilized by authentic leaders.

Significance of the Study

Theoretically, Stewart-Wherry (2012) asserts authentic leadership has gained recognition, focus, and attention from the applied, academic management and organizational leadership literatures. While a recent upsurge in theoretical, empirical, and practical investigations signify possibilities for lessening some of the conceptual confusion in the authentic leadership literature, identifying specific methods for personal development and functioning in leader-follower relationships have not been studied in the context of organizational leadership (Zhu, 2006). Further, Zhu (2006) suggests mechanisms and processes through which authentic leaders utilize in their day-to-day practice to engage and develop followers and achieve organizational goals including identity, perspectives, and decision-making remains unknown. This gap in empirical research makes it difficult to assess the validity of assertions regarding any positive effects of authentic leadership advanced by its proponents. Hypotheses regarding theoretical and empirical associations between authentic leadership and follower attitudes, behaviors and performance outcomes have not been fully investigated (Avolio et al., 2004; Avolio & Gardner, 2010; Walumbwa et al., 2011a).

Utilizing a qualitative research design, this interview-driven investigation seeks to examine the prevalence of theorized characteristics, values, attributes and/or traits of an authentic leader, as well as identify the innate processes, behaviors and mechanisms for developing authentically. Creswell (2007, 2009) elucidates unstructured interviews allow researchers to collect required qualitative data in the form of open-ended questions that attempt to elicit personal views and opinions of respondents and add depth to the understanding and comprehension of the phenomenon being studied. With an overall objective to deliver a deeper understanding into the processes, mechanisms, and influence dynamics associated with authentic leadership, this scholarship may be instrumental to future research that proposes strategies for ethical and moral leadership, building stronger relationships and or positive staff development for positive organizational outcomes. While few empirical studies have been conducted on the theory's direct relationship to or impact on organizational outcomes (Stewart-Wherry, 2012), this study pursues to fill the research gap between theory and real world exercise.

Theoretical Framework

Although several related theories on authentic leadership have been reviewed and infused into this research to compare and contrast, the study builds on the works of several authentic leadership scholars including, Avolio and Gardner (2005), Walumbwa, Avolio, Gardner, Wernsing and Peterson (2008), Shamir and Eilam (2005) and others. Many authentic leadership scholars view self-awareness as a grounding element of authenticity (Lord & Hall, 2005; Avolio et al., 2004; Silvia & Duval, 2001) and throughout the literature authenticity centers around being informed by the real self (Avolio & Gardner, 2005). According to Avolio and Gardner (2005) the significant intent for defining authentic

leadership as a construct was to make it multi-dimensional and multi-level. With this concept in mind, Avolio and Gardner (2005) postulate four dominating characteristics: (1) “rather than faking their leadership, authentic leaders are true to themselves”; (2) “authentic leaders are motivated by personal convictions”; (3) “authentic leaders are originals, not copies” and (4) the actions of authentic leaders are based on their personal values and convictions” (p. 321). These theoretical conceptualizations solidify the notion that subjective values and beliefs, positive self-concept, self-regulated positive behaviors, and truth are integral components of the authentic leadership construct (Luthans & Avolio, 2003; Avolio & Gardner, 2005; Ilies, Morgeson & Nahrgang, 2005). Although emphasis is placed on the importance of self-concept in other investigations by Shamir and Eilam (2005), Avolio and Gardner (2005), and Ilies et al. (2005), Harris (2011) purports the latter two groups of researchers are virtually silent on how leaders’ experiences might shape their self-concept (p. 28). Due to the extensiveness of early elaborations on the authentic leader, authentic leadership and authentic leadership development paradigms, Shamir and Eilam (2005) advance a narrower focus with the creation of their definition.

Progressing the research of Shamir and Eilam (2005), Harris (2011) suggests “authentic leadership is based on the life experiences of leaders and the followers’ abilities to identify with these life experiences” (p. 21). In this opinion, Shamir and Eilam (2005) contend life world experiences of leaders and the associated meanings of these experiences foster authentic leadership development versus the constant and or open development of specific skillsets that are learned. Further, Shamir and Eilam (2005) posit the life-stories approach supports the leader authentication process by followers in three ways, starting with the followers’ evaluation of whether the life story is logical and plausible. Secondly, followers get to conclude whether the life-story is consistent with the leader’s behaviors, which include purported traits, values, and convictions (Shamir & Eilam, 2005). Lastly, followers also measure alignment by utilizing implicit leadership theories to evaluate the degree in which the leader’s life-story correlates with their own backgrounds, values and belief systems (Shamir & Eilam, 2005). Avolio and Gardner (2005) elucidate one of the primary differences between their conceptualization of authentic leadership and the view described by Shamir and Eilam (2005) is the “intentional disregard for the leader’s style or the content of the leader’s values or convictions” (p. 321).

Avolio et al. (2004) hypothesize organizations can benefit from authentic leadership because of its key determinant of organizational commitment. Chen (2010) elucidates these researchers postulate authentic leadership is concerned with enhanced organizational performance which instills confidence in the future of the organization and the economic state to which it contributes. In mapping the emergent theoretical territory for authentic leadership, Avolio and Gardner (2005) delineate several imperative components that play a critical role in the development and behaviors of authentic leaders, to which the first of which is leader self-awareness. Ilies et al. (2005) and Shamir and Eilam (2005) assert leader self-awareness is an emerging process that occurs when individuals practice innate cognizance of their own existence (including strengths, weaknesses, purpose, values, and desires) and identify what inaugurate that existence within the context in which they function.

Self-awareness or strong sense of self details self-regulatory processes which are consistently, subjectively, and are continuously explored according through Deci and Ryan's (1995, 2000) self-determination theory. Self-determination theory postulates a system of internal regulatory processes, as opposed to external standards and consequences, is the way authenticity is achieved (Deci & Ryan, 2000). While Avolio and Gardner (2005) suggest authenticity is self-reflective, they apprise Kernis' (2003) theoretical conceptualization asserts "authenticity involves unbiased (balanced) processing, relational transparency/authenticity, and authentic behavior". Further, Luthans and Avolio (2003) augment authentic leadership and its development encompasses an inherent ethical/moral factor (Avolio & Gardner, 2005, p.325). The theories of May et al. (2003) delineate an authentic leader's ethical and transparent decision-making philosophy is based upon his or her reserves of moral capacity, efficacy, courage, and resiliency and functions as the foundation to address ethical concerns and accomplish reliable and sustained moral actions (Avolio & Gardner, 2005).

In the face of ongoing concerns about organizational injustice and corruption, a deep longing and need arises for leaders who can be trusted (Kretzschmar, 2007). Luthans and Avolio (2003) opine new rules are needed to address the ambiguities, lack of clarity, and the extent of the vulnerability people and organizations face. Avolio and Garner (2005) conjecture authentic leadership and its development can relate to the sustainable performance of organizations and recommend continued theory building and methodical testing to enhance understanding, prediction, and application of the construct. Thus, this interview-driven investigation examines the prevalence of theorized core characteristics, values, attributes and/or traits of an authentic leader, as well as identifies innate processes, behaviors and mechanisms for developing and practicing authentically. As the literature purports a dearth of research have studied authentic leader development and practice within the organizational environment and so, the extent of the benefits to the field of business is basically hypothesized. This investigation tests theoretical research by (1) identifying that authentic leaders exist in contemporary organizations; based on the theoretical construct, (2) examine how authentic leaders process, operate, develop, and work with others; and, (3) add to the body of literature.

In a multi-level examination of leaders and followers, the sampling strategy, based on the literature and phenomenology approach, utilized qualitative methodology in a parallel sampling design. Parallel sampling design represents a framework of sampling strategies that facilitate credible comparisons of two or more cases (Onwuegbuzie & Leech, 2007). The respondents were conveniently selected based on their status and relationships within and outside of the organization, identification as an authentic leader, and perceived ability to actualize the leadership construct being studied. While qualitative investigations typically involve the use of small samples, Onwuegbuzie and Leech (2005) assert choice of sample size is important as it determines the extent to which researchers can achieve three types of generalizations. This investigator pursued to assure that the sample size was not be so large that extracting thick, rich data would prove difficult; or too small that data saturation (as cited in Flick, 1998; Morse, 1995), theoretical saturation (Strauss & Corbin, 1990), or informational redundancy (Lincoln & Guba, 1985) would not be achieved (Onwuegbuzie & Leech, 2007). The sample consisted of leaders and followers, identified as being an authentic

leader, with a minimum of ten years of experience in a leadership role and whose employer is a corporation, government agency, educational institution, or nonprofit organization.

Seven cases were compared in a tightly nested sampling scheme which, according to Onwuegbuzie and Leech (2007, p. 238) is a set of “sampling strategies that facilitate credible comparisons of two or more members of the same subgroup, wherein one or more members of the subgroup represent a sub-sample of the full sample”. The sampling design involved comparing each case to all others in what is called pairwise sampling strategy which is customary in qualitative research (Onwuegbuzie & Leech, 2007, p. 238). Onwuegbuzie and Leech (2007) label this rigor as “pairwise” because all selected cases of a group are treated individually or by each “voice” and compared to all other cases, one at a time, in order to understand better the underlying phenomenon (p.238). Onwuegbuzie and Leech (2007) postulate the assumption that the collective voices generated by the group of cases will lead to data saturation. In situations where theoretical saturation is reached, analyzing these sets of voices can also lead to the generation of theory (Onwuegbuzie & Leech, 2007).

Phenomenology was selected as the qualitative methodology because of its concern with the study of experience from the perspective of the individual as well as other customary ways of perceiving, including bracketing, taken-for-granted assumptions, and conventional wisdom (Hycner, 1985). From an epistemological purview, Hycner (1985) posits phenomenological approaches are grounded in the paradigm of biased knowledge and subjectivity, and allows for insight into personal perspective, interpretation, motivations and behaviors. The rigor of the study encompassed a reliable comparison of three subgroups that were extracted from a baseline level (group 1) and two subsequent levels (groups 2 and 3) in a parallel sampling design. Following a phenomenological process that was applied to a purposefully selected convenience sample, Onwuegbuzie and Leech (2007) assert this methodology permits a multilevel sampling design which facilitates a credible comparison of three subgroups extracted from different levels of the study.

Research Questions

Yukl (2010) asserts authentic leadership research is understudied and over-defined as contemporary scholars, perceived through multiple versions of authentic leadership theory, are in less agreement. A recent conceptual variation includes focus on self-concepts and self-identities and refers to inner qualities and values germane to the self (Moore, 2008).

According to Yukl (2010, p. 424) some contemporary researchers and theory focuses are:

Be true to yourself and to the world (Terry, 1993); self-referential actions (Cashman, 1998); emotional intelligence principles of self-efficacy; self-regulation and empathy theory (Goleman, 1998); self-awareness, positive self-regulation, positive psychological capabilities (Luthans & Avolio, 2003) and positive self-development (Schabram, 2009); behavioral integrity (Simons, 1999); integrity and consistency (Palanski & Yammarino, 2007); the theories of two dimensional altruistic frameworks (Price, 2003); two dimensional frameworks based on values and emotions (Michie & Gooty; 2005); the dissimilarity between personal moral code and organizational moral code (Novicevic, Davis, Dorn, Buckley & Brown, 2005); four tenets model of self-development (Kernis, 2003); and the expanded version of Kernis' four tenets model (Ilies, et al., 2005).

Yukl (2010) posits these models build on conceptualizations that behaviors of authentic leaders include espoused values that are consistent with a core value system which perpetuates a trueness to selves and others, consistency in transactions, and ethical and moral deployments of what are right and fair regarding people. Variations on viewpoints suggest authentic leaders construct distinctive types of relationships that incorporate shared trust, exhibit transparency (exposed and genuine), provide leadership towards common organizational objectives, and place prominence on follower welfare and development (Yukl, 2010).

Research Question #1: Identify core characteristics, values, attributes and/or traits of an authentic leader.

Other theoretical variations on authentic leadership theory emphasize intuitiveness towards others, for example, five dimensions for empowering others (George, 2003) or Gardner et al.'s, (2005) speculation that authentic leaders encourage self-determination in followers to bring about autonomy, and competence and relatedness which constitutes a theoretical focus (as cited in Becker, 1998; Yammarino, Dionne, Schriesheim & Dansereau, 2008) or “directive approach” (Yukl, 2010, p. 424). Advancing the research of Bass and Steidlmeier (1999), Yukl (2010) progresses a version of authentic leadership that encompasses transformational and transactional attributes. Their hypothesis critically tests the presence of authenticity by measuring the extent of arousal and engagement by followers in activities beyond or outside of their scope due to influence by the leader (Bass & Steidlmeier, 1999). While it is important to identify the convergent validity between leadership constructs, Avolio and Gardner (2005) opine much ambiguity remains about the authentic leadership construct and for this reason the case for discriminant validity is important, as well.

It is concerning that because of the multitude of variables residing in the construct, processes underlying authentic leadership have not yet undergone rigorous testing. Advancing the work of Peus et al. (2010), Cottrill (2011) suggests “eleven studies on authentic leadership focused on the impact of ethically-oriented leadership styles, i.e., transformational, authentic, ethical, and spiritual leadership, on organizational performance between 1990 and 2009” (p. 41). Absent of concrete guidelines to test the various hypotheses, models or direction of the research, empirical investigations are simply isolated and cannot build upon each other (Cottrill, 2011). Yukl (2010) postulates “until differences in the definition of authentic leadership are resolved, differences between authentic leadership theory and other theories of leadership (e.g. servant, spiritual, transformational) remain unresolved because it will be difficult to determine what should be included in the research” (p. 425).

Research Question #2: What are the processes, behaviors and mechanisms for developing authentically?

The unique role of authentic leadership in organizations is evidenced by the limited but existing literature. Empirical, theoretical, and practitioner research hypothesizes authentic leadership may matter significantly at the individual, group, and organizational levels. This

research examines the individual who is identified as an authentic leader and performs and systematic rigor to identify the mechanisms and processes by which authentic leaders exert their influence on follower's attitudes and behaviors. The researcher of this study considers three assumptions in pursuit of this examination:

1. Respondents will be honest and transparent in their responses;
2. Respondents will accurately define their constructions;
3. Qualitative phenomenological examination is most appropriate for this type of study and the best approach for answering the research questions.

Scope and Limitations

Seven individuals were identified as authentic leaders and, in meeting this particular criteria, were invited to participate in a study specifically designed to investigate the existence of authentic leadership in contemporary organizations, identify and provide understanding of the mechanisms and processes authentic leaders utilize in their real world practice within an organizational setting, and add to the body of existing knowledge. This qualitative research design utilized unstructured, in-depth interviews that asked 25 open-ended questions based on the literature to obtain subjective descriptive information that provided answers to the research questions. All interviews were recorded by digital recorder and data were subsequently transcribed, member-checked, and then interpreted and evaluated. Only one respondent purported knowledge of the term "authentic leader". The respondents were representatives of four types of organizations: corporate, government, educational institution and nonprofit.

The generalizability of research findings is controlled by the logic of sampling and usually postulates a random selection process of the representative sample which is conducted in a manner that offers the ability to generalize findings to the population (Creswell, 2009). The qualitative paradigm ambitions to understand a phenomenon from the innate viewpoint of each respondent, by means of detailed descriptions of cognitive and symbolic actions, and through meaning related to observable behavior (Wildemuth, 1993). Because qualitative research methodology is generally comprised of a small convenient sample, results do not account for or predict the behavior of a wide classification of people. Munhall (1989) apprises this methodology, which rejects both a cause-and-effect hypotheses and any widespread laws lacking socio-historical context, the researcher and respondent become involved together in the phenomenon being studied. While relevant literature warns that understandings derived from experiential qualitative investigations may be realized only after several exchanges are carried out or through interpretations of data collection methodologies (Greenberg, Rice & Elliot, 1993), Kemmis (1980) avows the real significance of non-experimental research rests in its connection to the real world, its ability to define behaviors within social and historical contexts, and its capacity to rationally critique these descriptions. Holistic by nature, qualitative research is concerned with specific human behavior in all of its intricacies (Creswell, 2009).

Another limitation that the researcher encountered was running out of time due to several occurrences (e.g., the rescheduling interviews, lapses in member-checking timeline, a computer crash, re-processing of lost data) along the way that impacted the time-frame

allotted for interviews and observations. One observation and one face-to-face session was conducted on the same day for each respondent. Thus, contact between researcher and respondents was personal, individually focused, and lengthy. It is the researcher's belief that a lack of time was the causal factor in the decision to reduce the number of projected respondents. Data were transcribed and member-checked for seven interviews. Interviews and observation data were analyzed using NVivo 10 software and deduced through the methodological framework of Hycner (1985). NVivo 10 results were qualified in order to ensure a clear and concise demonstration of study results.

Definition of Key Terms

Authentic leadership. "A process that draws from both positive psychological capacities and a highly developed organizational context, which results in both greater self-awareness and self-regulated positive behaviors on the part of leaders and associates, fostering positive self-development" (Luthans & Avolio, 2003, p. 243). "A pattern of leader behavior that draws upon and promotes both positive psychological capacities and a positive ethical climate, to foster greater self-awareness, an internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers fostering positive self-development" (Walumbwa et al., 2008, p. 94).

Authentic leader. "People who have the following attributes: (a) the role of the leader is a central component of their self-concept, (b) they have achieved a high level of self-resolution or self-concept clarity, (c) their goals are self-concordant, and (d) their behavior is self-expressive" (Shamir & Eilam, 2005, p. 399).

Authenticity. "Owning one's personal experiences, be they thoughts, emotions, needs, preferences, or beliefs, processes captured by the injunction to know oneself and behaving in accordance with the true self" (Harter, 2002, p. 382).

Authentic follower. "Followers who follow leaders for authentic reasons and have an authentic relationship with the leader" (Shamir & Eilam, 2005, p. x). "Mirrors the developmental processes of authentic leadership and is characterized by heightened levels of followers' self-awareness and self-regulation leading to positive follower development and outcomes" (Gardner & Schermerhorn, 2004, p. 322).

Organization of Study

The research paper is organized in the following order: Chapter 1 introduces a qualitative investigation of authentic leadership that encompasses an integrated theoretical framework. Based on the literature, this study addresses the imperative need to recognize specific characteristics, traits, behaviors, processes and mechanisms of an authentic leader. Perspectives regarding the characteristic of authentic leaders and how leaders develop personally are used to create two research questions. Chapter 2 offers a review of the extant literature on authentic leadership and compares and contrasts various concepts on authentic leadership. Chapter 3 presents the research methodology engaged to study the problem. An explanation is provided as to the reasoning behind selecting an interview-driven qualitative methodology and its suitability for this particular type of research project. Data collection methods, instrumentation, researcher role, protection of the rights of the respondents, and

data analysis are also discussed in the chapter. Chapter 4 delivers principle findings, with regards to the research questions, in an analysis and explanation of the findings. Chapter 5 discusses the theoretical implications, insights and conclusions drawn from the analysis of Chapter 4 and includes the significance of the study, limitations, implications and suggestions for future research.

Summary

Viewed by some scholars as an extension of transformational and transactional leadership (Bass & Steidlmeier, 1999) or being closely related to charismatic, servant and spiritual leadership (Avolio & Gardner, 2005), the literature purport authentic leaders are stewards and servants who not only lead with their heads but with their hearts as well. While authentic leaders are passionate about their followers and those they serve, they are passionate on doing the right thing and thus, produce high energy to make the impossible possible (Gardner, Avolio, Luthans, May & Walumbwa, 2005). To this end, it is argued that through the modeling of authentic deeds (Shamir & Eilam, 2005), self-awareness (Avolio & Garner, 2005; Avolio et al., 2004; Walumbwa et al., 2008), positive psychological capital (Avolio et al., 2004), relational transparency (Avolio & Garner, 2005), self-regulation (Sparrowe, 2005) and balanced processing (Walumbwa et al., 2008), authentic leaders are the “solution to the leadership crisis in the modern business world” (Toor & Ofori, 2008, p. 624). Citing the research of Avolio (2005), Zhu (2006) suggests authentic leadership is “the highest end of leadership” as the “leading by example” concept is the key factor that nurtures authenticity within a leader follower relationship (p. 6). According to Avolio et al. (2004) and Luthans and Avolio (2003), “authentic leaders influence follower’s moral, emotional, affective and cognitive development through the modeling of positive values, psychological states, moral behaviors and self-development” (Zhu, 2006, p. 6). Thus, according to Zhu (2006, p. 6) authentic leaders positively impact followers to the extent that followers are empowered to confront “potential moral dilemmas and ethical challenges and solve these challenges in an ethical way, placing the interests of the organization above self-interests”. The review of the literature concentrates on the dynamics and intricacies of authentic leadership theory.

Review of the Literature

This literature review process includes the utilization of the ProQuest database which searches eighteen databases (ABI/INFORM Complete; Dissertations and Theses@ Regent University; EconLit; Engineering Research Database; ERIC; Ethnic NewsWatch; International Index to Performing Arts; MEDLINE; PAIS International; ProQuest Dissertations and Theses; ProQuest Education Journals; ProQuest Entrepreneurialship; ProQuest Historic Newspapers: Christian Science Monitor, New York Times, Wall Street Journal, Los Angeles Times, Washington Post; and ProQuest Religion) for literature in relation to the keyword phrases. Keyword phrases used for the search were: authentic leadership, authentic leadership in organizations, authentic leader, authenticity, authentic followership, moral leadership, and authenticity in leader – follower relationships.

The construct, examined in theoretical, practitioner, and empirical studies, is mostly tested through qualitative or mixed method procedures (Avolio & Gardner, 2005). While it is recognized that leadership literature has paid limited attention to the processes, construction and development of authentic leaders and authentic followers and even less

regard to its relevance in organizations, authentic leadership is frequently investigated with transformational leadership theory, servant leadership theory, spiritual leadership theory, charismatic leadership theory or ethical leadership (Avolio & Gardner, 2005). This review of the literature utilized the ProQuest database, scholar.google.com, JSTOR (<http://www.jstor.org>) and printed manuscripts to produced 114 resources of which 77 were selected for their relevance to this neglected discussion. The review of the literature defines authentic leadership and discusses the historic roots of authenticity, contemporary theories of authentic leadership, constructual challenges, consequences and solutions, and the conclusion section, which includes the implications for theory, policy and practice for future research.

Authentic Leadership Defined

Chan, Hannah, and Gardner (2005) contend authentic leadership is a comparative “newcomer to the leadership literature canon, first appearing in the 1990s in the fields of sociology and education” (Ladkin & Taylor, 2010, p.65). However, citing the work of Hollister (1993), McMurray, Pirola-Merlo, Sarros & Islam (2010) postulate authentic leadership research has been a neglected area in organizational studies. In the absence of a succinct definition that is generally accepted, the characteristics constituting authentic leadership characteristics vary in definition (see Table 1). Nonetheless, while the concept is broadly defined Yukl (2010) postulates it is a normative theory that describes an ideal leader for organizations. Silver (2008) suggests this knowledge and understanding is necessary to the “integration of representatives from the social sciences and business fields that enable organizations to deliver what O’Connell (1988) describes as worthwhile service” (p. 27).

Table 1

Definitions of Authentic Leaders

Source	Definition
Avolio and Gardner (2005, p. 321)	Authentic leaders are “those who are aware of how they think and behave and are perceived by others as being aware of their own and others values/moral perspectives, knowledge, and strengths; aware of the context in which they operate; and are confident, hopeful, optimistic, resilient, and of high moral character”.
Avolio, Luthans and Walumbwa (2004, p. 4)	Authentic leaders are “those individuals who know who they are, what they think and behave and are perceived by others as

SOBIE 2014

as cited in Avolio, Gardner, Walumbwa, Luthans and May (2004, pp. 802-803)	being aware of their own and others' values/moral perspective, knowledge, and strengths; aware of the context in which they operate; and who are confident, hopeful, resilient, and of high moral character".
Begley (2004, p. 5)	Authentic leaders exhibit, "self-knowledge, sensitivity to the orientations of others, and a technical sophistication that leads to a synergy of leadership action".
Fields (2007, p.195) as cited in Chan et al. (2005)	Authentic leaders are "characterized as having (a) heightened capacity to effectively process self-information, including values, beliefs, goals, and emotions; (b) ability to use their self-system to regulate behaviors while acting as a leader; (c) high levels of clarity of self; and (d) ability to manage tension between self and social demands".
George & Sims (2007, p. xxxi)	Authentic leaders are "genuine people who are true to themselves and to what they believe in. They engender trust and develop genuine connections with others. Because people trust them, they are able to motivate others to high levels of performance. Rather than letting the expectations of other people guide them, they are prepared to be their own person and go their own way. As they develop as authentic leaders, they are more concerned about serving others than they are about their own success or recognition".
Ilies, Morgeson & Nahrgang (2005, p. 374)	"Authentic leaders are deeply aware of their values and beliefs, they are self-confident, genuine, reliable and trustworthy, and they focus on building followers' strengths, broadening their thinking and creating a positive and engaging organizational context".
Luthans & Avolio (2003, p. 243)	"The authentic leader is confident, hopeful, optimistic, resilient, transparent, moral/ethical future-oriented, and gives priority to developing associates into leaders themselves. The authentic leader does not try to coerce or even rationally persuade associates, but rather the leader's authentic values, beliefs, and behaviors serve to model the development of associates."
Shamir & Eilam (2005, p. 399)	"Authentic leaders can be distinguished from less authentic or inauthentic leaders by four self-related characteristics: 1) the degree of person role merger i.e. the salience of the leadership role in their self-concept, 2) the level of self-concept clarity and the extent to which this clarity centers around strongly held values and convictions, 3) the extent to which their goals are self-concordant, and 4) the degree to which their behavior is consistent with their self-concept."
Walumbwa et al. (2008, p. 94)	An authentic leader is one who exhibits "a pattern of leader behavior that draws upon and promotes positive psychological capacities and a positive ethical climate, to foster greater self-awareness, and internalized moral perspective, balanced processing of information, and relational transparency on the part of leaders working with followers, fostering positive self-development".

Historical Roots of Authenticity

According to Harter (2002) the concept of authenticity has an expansive history within the fields of philosophy and psychology (Erickson, 1995, p. 319). From an historical purview, Avolio and Gardner (2005) elucidate the roots of authenticity originate in Ancient Greek philosophy to which this foundational theme elevates to the recognized Greek aphorism, *to thine own self be true*. Citing the investigation of Trilling (1972), Gardner, Cogliser, Davis and Dickens (2011) apprise the etymology of the word “authentic” points to the Greek word, “*authento*” which means to have complete control (p. 5). This notion reflects the belief of Kernis and Goldman (2006) that authentic leaders are completely self-controlled. Based on the postulation that an “unexamined’ life is not worth living”, Gardner et al. (2011, p. 5) inform Socrates provides an early orientation to authenticity by concentrating on the importance of self-inquiry. Hutchinson (1995) purports Aristotle trailed with an ethical interpretation that suggested a person’s individual pursuit of a higher good is accomplished through self-realization. Kernis and Goldman (2006) suggest self-realization is associated with an innate well-being or “*eudaimonia*,” which according to Gardner et al. (2011) is formed from contentment that arises from effectively accomplishing activities that reflect one’s own true calling.

Although the concept of authenticity can be traced back to sixth century BCE, Liedtka (2008) asserts the Existentialism work of Jean Paul Sartre (1956) and Martin Heidegger (1962) has also supported much of its scholarly attention. According to these early 20th-century philosophers authenticity is developmental or a process of continually becoming (Liedtka, 2008). Heidegger (1962, p. 159) further asserts “each one of us is what we pursue and cares for” to which in everyday terms, Liedtka (2008) vies “we understand ourselves and our existence by way of the activities we pursue and the things we take care of” (p. 239). Etzioni (1968) posits by the 1950s through 1960s the study of authenticity transitioned from a sole focus on executive level leadership to encompass all levels of staff. With former attention drawn to top executives, Barnard (1949) distinguishes between “personal responsibility...an obligation to personally engage in social codes such as abiding in the law and personal commitments” and “organizational responsibility” considered formerly as “a mandate to morally guide the company internally and in the social context” and recognized conflict theory and the numerous variables between desires and responsibilities (Schabram, 2009, p. 16). Sartre (1956) and Etzioni (1968) clarified the concept of authenticity further by implying a responsibility to be true to one’s moral self; in addition to making sound business decision that value self-interest and public good (Schabram, 2009).

From an organizational leadership standpoint, this paradigm shift examines the entire organization through an authentic lens that displayed strong accordance between external behavior and internal values (Etzioni, 1968). During this period, Avolio and Gardner (2005) opine of particular relevance are the writings of humanistic psychologists Carl Rogers (1959, 1963) and A. H. Maslow (1968, 1971) who focused on the development of the self-actualized person (i.e., individuals that possessed a clear and accurate picture of self and life). The

observations of these psychologists fully functioning self-actualized persons were unencumbered by others' expectations of them and are able to make sound personal choices (Liedtka, 2008). Maslow's five-level needs hierarchy considers persons arriving at the fifth level, self-actualization, as authentic and having strong ethical convictions (Ivancevich, Konopaske & Matteson, 2008; Liedtka, 2008). While the achievement of total authenticity is ideal, Erickson (1995) argues humans do not have the capacity to be completely authentic or inauthenticity. Viewing authenticity as a progressive (e.g., more) or regressive (e.g., less) development, Erickson (1995) counsels it is unwise to consider the construct as an either/or condition (Gardner et al., 2011).

While the emergence of various theoretical frameworks defining what constitutes effective leadership existed long before the 1900s, advancing the work of Antonakis et al. (2004), Mahoney (2009) purports documentation of these constructs only began around the beginning of the 20th century and the earliest philosophical conceptions of authenticity surfaced in the 1960s reflecting the Novicevic et al. (2006) hypothesis that organizational authenticity is manifest through the leadership (Gardner et al., 2011). In an examination of varied historical ideologies in leadership research, Mahoney (2009) concludes scholars have traditionally failed to recognize any level of significance or correlation between one's personal honesty, values, and moral characteristics and their behaviors in ways that impact self, others, the work place and society until the Grover and Moors-Man (2007) global study. Along these lines and in acknowledgment of the research of Lowe and Gardner (2001), McMurray, Pirola-Merlo, Sarros and Islam (2010) advance leadership studies have historically neglected the "unconscious and affective features of leader-follower interactions" in organizational studies (p. 438). Silver (2008) asserts such scholarship and understanding does not only progress organizational development, but is significant to the "integration of representatives from the social sciences and business fields that enable organizations to deliver what O'Connell (1988) describes as worthwhile service" (p. 27). Conclusively, Gardner et al. (2006, p. 6) suggest a meta-analysis of the historical literature conducted by Kernis and Goldman (2006) offered a basic understanding of authentic leadership that was centered on four themes:

A range of mental and behavioral processes that explain how people discover and construct a core sense of self, and how this core self is maintained across situations and over time. Moreover, they assert that this literature reflects four central themes: "authentic functioning of people's (1) self-understanding, (2) openness to objectively recognizing their ontological realities (e.g., evaluating their desirable and undesirable self-aspects), (3) actions, and (4) orientation towards interpersonal relationships" (p. 284). Moreover, these themes are consistent with their conceptualization of authenticity as encompassing four key components: (1) awareness (i.e., knowledge and trust in one's thoughts, feelings, motives and values); (2) unbiased processing (i.e., objectivity about and acceptance of one's positive and negative attributes); (3) behavior (i.e., acting based on one's true preferences, values, and needs rather than merely acting to please others, secure rewards, or avoid punishments); and (4) relational orientation (i.e., achieving and valuing truthfulness and openness in one's close relationships; Kernis, 2003; Kernis & Goldman, 2006). This multi-component conceptualization of authenticity, in turn, has provided the theoretical foundation for several theories of AL (Gardner, Avolio, Luthans, May, & Walumbwa, 2005a; Ilies, Morgeson, & Nahrgang, 2005; Spitzmuller & Ilies, 2010; Walumbwa, Avolio, Gardner, Wernsing, & Peterson, 2008).

A total disappearance of authentic leadership from the literature occurred between 1970s until the early 1990s (Liedtka, 2008), to which Chan et al. (2005) opine the construct resurfaced initially in the fields of sociology and education initially but also attracted attention, once again, from the leadership studies community (Ladkin & Taylor, 2010). Gardner et al. (2011) postulate the research most instrumental in reigniting scholarly interest is Luthans and Avolio (2003) conceptualization that the model include positive organizational behavior (POB) (as cited in Luthans, 2002), theories for authentic development in leaders (e.g., transformational/full-range leadership (as cited in Avolio, 1999), and ethical perspective-taking (as cited in Kegan, 1982). While Walumbwa et al. (2008) posit scholars (e.g., Cooper et al., 2005; Shamir & Eilam, 2005; Sparrowe, 2005) express concerns about defining authentic leadership as a construct that encompasses the positive psychological capacities of confidence, hope, optimism, and resilience (as cited in Luthans et al., 2007), the core components of the construct are governed by four themes: self-awareness, constructive self-regulation, constructive self-development, and morality, which have consistently underpinned much of the way in which the term is used (Gardner et al., 2011).

Moving away from the “outdated notions of ‘heroic’ models of leadership that encourage adulation of a few gifted individuals at the top of organizations” (Alban-Metcalfe & Alimo-Metcalfe, 2007, p.116), Luthans and Avolio (2005) assert an innovative way to define authentic leadership as a construct was to make it multi-dimensional and multi-level. Engaging an effort to gain clarity into the characteristics, traits and processes of authentic leaders, Avolio, Gardner, Walumbwa, Luthans and May (2004, p. 4) elucidate authentic leaders are:

Those who are deeply aware of how they think, behave and are perceived by others as being aware of their own and others’ values/moral perspectives, knowledge, and strengths; aware of the context in which they operate; and who are confident, hopeful, optimistic, resilient, and of high moral character.

Referencing a broadminded study on leadership behavior by Hansen (1987), Bjugstad et al. (2006) postulate active authentic followership signifies true acceptance of a leader’s authority and gives legitimacy to the direction and vision of the leader. This conceptualization purports followers introduce acceptance which impacts the progression of authentic leadership to the extent that authentic leaders are non-existent until they are validated by “followers who authenticate the leader and follow him or her authentically” (Shamir & Eilam, 2005, p. 401). While Bjugstad et al. (2006) acquaint leaders can only accomplish something at the permission of their followers (as cited in Dupree, 1992), Shamir and Eilam (2005) agree the development of authentic leadership is not only contingent on the existence or creation of authenticity in leaders but also the authentication of the leader by followers which reinforces the leader’s authenticity. As the significance of follower perceptions is infused into the construct, Gardner, Avolio, Luthans, May and Walumbwa (2005) contend authentic leadership outspreads past the authenticity of the leader to encompass authentic dealings with followers and others acquaintances.

Leader and follower associations are specified behaviors that engage both “leaders and followers as active agents in an authentic relationship” (Kliuchnikov, 2011, p. 72) and

are characterized by “a) transparency, openness, and trust, b) guidance towards worthy objectives, and c) an emphasis on follower development” (Gardner, 2005, p. 345). Goldman and Kernis (2002) assert “relational authenticity involves an active process of self-disclosure and the development of mutual intimacy and trust so the intimates will see one’s true self-aspects, both good and bad” (p. 19). Delineated as a unique leadership style hypothesized to occupy personality and charisma, George (2003) augments authentic leaders demonstrate a high level of self-discipline, are grounded in purpose, engage in a practice of solid values and morals, and lead with the heart, passion, and compassion to establish connected relationships.

Kernis (2003) advance a developmental model that suggests attainment of authenticity produces ultimate levels of self-esteem. That is, as individuals come to know and accept themselves, including their strengths and weaknesses, they begin to exhibit high levels of stable, as opposed to fragile, self-esteem (Walumbwa et al., 2008). Such individuals are mature and comparatively free of the defensive and self-justifying biases exhibited by immature or less self-aware individuals (Walumbwa et al., 2008). Kernis (2003) postulates persons at this stage of development are consequently more comfortable forming transparent, open, and close relationships with other leaders and or followers. Moreover, these individuals display authentic behaviors and attitudes that reflect consistency with their values, beliefs, and actions (Kernis, 2003). Ryan and Deci (2003) profoundly assert authenticity is achieved when individuals enact internalized self-regulation processes-namely, a conduct that is guided by internal values as opposed to external threats, inducements, or social expectations and rewards (Walumbwa et al., 2008).

While there are many positive approaches to effective leadership, such as transformational leadership, ethical leadership, charismatic leadership, and authentic leadership (Eagly & Carli, 2007), Avolio and Gardner (2005) postulate authentic leadership serves as the single root construct for all positive leadership approaches and is fundamental to the ability of individuals to develop meaningful workplace relationships and to establish positive, ethical work environments (Dann, 2008; Chanchal, 2009; Harris, 2011). Consistently throughout the literature authentic leadership is found to be informed by the “true” self (Avolio & Gardner, 2005). Most scholars perceive self-awareness as the key component of authenticity (Lord & Hall, 2005; Avolio et al., 2004; Silvia & Duval, 2001) and have yielded models “grounded in Kernis’s (2003) multi-component conception of authenticity” (Gardner, 2011, p. 9). However, advancing the research of Hannah, Lester and Vogelgesang (2005), Luthans and Avolio (2003), and May, Chan, Hodges and Avolio (2003), Ladkin and Taylor (2010) posit the literature strongly connects authentic leadership to moral leadership which in some ways resemble philosophies of socialized charismatic leadership.

In developing workplace relationships, the initial task for the authentic leader is to build followers’ self-efficacy which is reportedly what Luthans et al. (2007) call the state of confidence (Gardner & Schermerhorn, 2004). Self-efficacy is defined as “one’s own belief or personal judgment about how well one can execute a specific task within a particular context” (Gardner & Schermerhorn, 2004, p. 274). Advancing the meta-analytic examination of 114 studies by Alexander and Andersen (1993) and research by Stajkovic and Luthans (2001) and Luthans and Luthans (2004), Gardner and Schermerhorn (2004) suggest “the

self-efficacy was more strongly linked to work performance than any other well-known organizational behavioral construct, such as job satisfaction, goal-setting, conscientiousness, feedback and organizational behavioral modification” (p. 274). Authentic leaders demonstrating transparent decision-making, confidence, optimism, hope, pliability, and consistency between word and deeds, have translucent intentions and can recognize their own weaknesses (Ceri-Booms, 2010). Gardner and Schermerhorn (2004) postulate true authentic leaders are focused on creating, building and strengthening relational trust and positive capabilities in others, to which Jones (2009) asserts is an admirable goal that supports the desires of followers. Authentic leaders whose behaviors are transparent, ethical, credible, and well intentioned (Harris, 2011) contribute responsively to the “eudaemonic well-being of leaders and followers” (Avolio & Gardner, 2005, p. 317).

According to McMurray (2010, p. 21) authentic leadership engages a relational process which “unites diverse individuals committed to a just common good through shared experiences in a spirit of caring and social responsibility”. In reviewing authentic leadership from a relational perspective, Eagly (2005) posits the focus moves beyond one’s relationship with self and considers an active dynamic and evolving process with others (Harris, 2011). Relational authenticity represents an integral component of authentic leadership and the process of developing authentic leaders (Avolio & Gardner, 2005; Eagly, 2005). Citing the work of Rosener (1990), Goodsell (2010) purports contemporary authentic leaders are continuously learning to lead by collectively embracing and supporting each other’s experience. In a gradual progression, authentic leadership engages an evolving application that seeks full comprehension on how authenticity relates to leadership, followership, leader and follower relationships and subsequently positive organizational climates and outcomes that promote and sustain authentic performance (Brennan, 2010). Authentic leaders integrate their leadership role into their own concept of self and possess a clear sense of personal values and convictions (Shamir & Eilam, 2005). Further, authentic leaders are innately driven by their passion versus externally directed influences, and these leaders have a high congruence between their ideals and actual self (Anderson, 2005; Ceri-Booms, 2010).

Relational authenticity advances significant attention to the various facets of inclusion, engagement, commitment, positive social exchanges, and trust (Avolio & Gardner, 2005). Through increased self-awareness, self-regulation, and positive modeling, authentic leaders develop authenticity in followers and foster solid relationships (Avolio & Gardner, 2005). Genuine behaviors characteristically attribute to followers’ conscious distinctions between postured inauthenticity and authentic behaviors (Verbos, Gerard, Forshey, Harding & Miller, 2007). When these activities are done well, leaders’ and follower’s experience eudaemonic well-being (e.g. happiness “personal expressiveness, self-realization/development, flow experiences, self-efficacy/self-esteem”) which evolves into a conjoint focus on achieving sustainable and authentic performance (Avolio & Gardner, 2005, p. 318). According to Shamir and Eilam (2005) authentic leadership, similar to other positive leadership approaches, represents a relational-oriented model wherein both leaders and followers play an integral role in the authentic leadership development process (Harris, 2011). Thus, to thoroughly define authentic leadership, Shamir and Eilam (2005) introduced the construct of authentic followership, which is achieved by “followers who follow leaders for authentic reasons and have an authentic relationship with the leader” (p. x). Gardner and Schermerhorn (2004) argue authentic followership “mirrors the developmental processes of

authentic leadership and is characterized by heightened levels of followers' self-awareness and self-regulation leading to positive follower development and outcomes" (p. 322).

Advancing the work of Cameron, Dutton and Quinn (2003), Verbos et al. (2007) suggest positive organizational scholarship (POS) as an application of positive consciousness at the macro or organization level. This practice of positive psychology concentrates on human functioning at the positive end of the psychological spectrum (Verbos et al., 2007). The process engages such non-clinical relationship-building concepts as flourishing, hope, optimism and subjective well-being and affords a more friendlier approach to psychology than the disease-based model (as cited in Seligman & Csikszentmihalyi, 2000) that studies pathology and repair (Verbos et al., 2007). Dissimilar from other leadership approaches, Chen (2010) purports authentic leadership incorporates the essences of both macro (organization and system level analysis) and micro (individual or leader-follower relationships) levels of management. At the macro level, authentic leaders are focused on moral and ethical behaviors as the business code of conduct (Chen, 2010). At the micro level, (as cited in Avolio, 2007) and through self-awareness, authentic leadership behavior produces a substantial difference in the workplace through encouraging followers to build connections and experience personal meaning at work (Chen, 2010).

According to Ryan and Deci (2000) and Walumbwa et al. (2008) authentic organizational leaders who are cognizant to abide by their true beliefs will motivate and cause commitment from followers. By means of strong authentic relationships that are more powerful and lasting when the leader is transparent and personal experiences, followers are encouraged to imitate self-awareness, transparent and authentic behaviors (Chanchal, 2009; Chen, 2010). Gardner and Schermerhorn (2004) further elucidate that through the ongoing process of developing authentic leaders, both leaders and followers are engaged in gaining self-awareness and establishing open, transparent, trusting and genuine relationships, which can be shaped and impacted by planned interventions. Henceforth, authentic followers are caused to exhibit "internalized regulatory processes, balanced processing of information, relational transparency, and authentic behavior that parallels what is described as characterizing authentic leaders" (Gardner & Schermerhorn, 2004, p. 274). Gardner and Schermerhorn (2004) clearly differentiate and define authentic leadership development as a very complex process that could be broadly labeled as "life long program" (Harris, 2011). Walumbwa et al. (2008, p. 104) purport authentic leaders are "anchored by their own deep sense of self (self-awareness) ... know themselves and remain true to their values".

From a global perspective, Hofstede (2001) asserts organizations within a culture are most impacted by the dimensions of power distance and uncertainty avoidance. Cultures with a high power distance show an acceptance of centralization of leadership and autocratic leadership, while those with a lower power distance show an acceptance of decentralization and participative leadership, with participation initiation by subordinates evident at very low levels (Moore, 2007). Badaracco (1992) accredits Barnard (1938) with conjecturing the idea that leader authenticity emerges during periods of moral outrage against the corporate world. Barnard (1938, p. 83) defines leadership as "the quality of the behavior of individuals whereby they guide people or their activities in an organized effort" (Schabram, 2009, p. 15). Given the current global state of economic disasters existing in most parts of the world,

including environmental catastrophes which have far-reaching business impacts, Avolio and Gardner (2005) assert people are longing for increased assurance, faith, confidence, and genuine interactions with others (Harris, 2011, p. 29). Organizations are comprised of levels and layers of relationships. The relational construct of authentic leadership in organizations is defined by Luthans and Avolio (2003, p. 243) as “ a process that draws from both positive psychological capacities and a highly developed organizational context, which results in both greater self-awareness and self-regulated positive behaviors on the part of leaders and associates, fostering positive self-development” (Avolio & Gardner, 2005, p. 321). Avolio and Gardner (2005) hypothesize authentic leadership is one kind of leadership specifically for a global context.

Constructual Challenges, Consequences and Solutions

Yukl (2010) postulates “a leader’s authenticity is the most prominent aspect of the theory, and although conceptualized as a continuous variable, it is often discussed in terms of a dichotomy” (p.426). However, the broadness of definitions by several scholars suggest individualized and invisible mechanisms as well as complications in quantifying the construct (Avolio & Gardner, 2005; Yukl, 2010). As Cooper et al. (2005) point out, multiple conceptualizations and variable processes by which theorists on authentic leadership have developed, impose even more difficulty with the concept from empirical, theoretical and practical standpoints. It is broadly postulated that a unified, shared and agreed upon definition of authentic leadership does not exist (Ladkin & Taylor, 2010; Yukl, 2010; Gardner et al., 2011).

With deep roots in many disciplines, for example, philosophy, developmental and social psychology, and even the fine arts, the historical view of authenticity is centered around one’s relationship with self (Avolio & Gardner, 2005; Liedtka, 2008; Yukl, 2010; Gardner et al., 2011). While the construct purports individuals utilize personal experiences to interact with others in accordance to their true selves (Avolio & Gardner, 2005), a psychological perspective (as cited in Harris, 2011) suggests authenticity is associated with personality traits and self-identity to which Deci and Ryan (2000), Kernis (2003), Kernis and Goldman (2005), and Ryan and Deci (2001, 2003) purport is thus grounded in advanced levels of cognitive, emotional, and moral development (Walumbwa et al., 2008).

While it is theorized that various concepts in the authentic leadership literature may reflect an association with the positive organizational studies movement (Ladkin & Taylor, 2010), two most distinguishing and crucial components of authentic leadership theory are postulated by Avolio, Gardner, and colleagues (e.g., Avolio & Gardner, 2005; Gardner, Avolio, Luthans et al., 2005; Gardner et al., 2005) and include an inherent moral component and the self-development focus (Walumbwa et al., 2008). Specifically, Gardner, Avolio, Luthans et al. (2005) and others (as cited in Chan et al., 2005; Eigel & Kuhnert, 2005; Hannah, et al., 2005; Luthans & Avolio, 2003; May et al., 2003) assert an advanced level of moral development is compulsory for one to achieve leader authenticity. Gardner, Avolio, Luthans et al. (2005) advance several definitions, theories, and philosophical explanations as justification for rejecting the argument that authentic leadership is ethically neutral. These

researchers assert that by means of defining authenticity as incorporating self-awareness, self-regulation, positive self-acceptance, and morality low levels of moral development in leaders is empirically and theoretically inconsistent with the model (Walumbwa et al., 2008).

Shamir and Eilam (2005) postulate “authentic leadership is based on the life experiences of leaders and the followers’ abilities to identify with these life experiences” (Harris, 2011, p. 21). In this view, Shamir and Eilam (2005) contend the life world experiences of leaders and their associated meaning foster authentic leadership development versus the ongoing and open development of specific skills or leadership styles (Harris, 2011). Avolio and Gardner (2005) postulate one of the primary differences between their conceptualization of authentic leadership and the view described by Shamir and Eilam (2005) is their “intentional disregard for —the leader’s style or the content of the leader’s values or convictions” (p. 321). In addition to viewing only positive values orientation as an integral component of authentic leadership, Shamir and Eilam (2005), Avolio and Gardner (2005) and Ilies et al. (2005), emphasize the importance of the role of a positive self-concept in the authentic leadership construct, Avolio and Gardner (2005), as well as Ilies et al. (2005), are silent on how leaders’ experiences may shape their self-concept (Harris, 2011, p. 28).

While many researchers have developed authentic leadership models that integrate self-based theories “(e.g., self-awareness, self-regulation, self-knowledge, self-esteem, self-verification, self-concept clarity, self-certainty, self-determination, self-congruence, self-consistency, self-concordance, self-expression) and identification processes described by social psychologists (Leary & Tangney, 2003)” (Gardner et al., 2011, p. 21), Shamir and Eilam (2005) posit their life-stories approach to authentic leadership supports the leader-follower relationship building which then supports the follow’s authentication process in three ways. First, followers evaluate whether the life story is coherent and plausible; second, they determine whether the life-story effectively exhibits the leader’s traits, values, and convictions; and lastly, followers assess to what degree the life-story of the leader relates with their own backgrounds and values. Interestingly, Harris (2011) challenges of this methodology to authentic leadership by hypothesizing gender, culture and even race differences of leaders may or may not resonate with others in the workplace. More specifically the methodology could prove problematic for women leaders, for example, working in the dominant culture organizations seeking to build authentic relationships through the life-stories approach, who’s life-stories and associated meaning systems, different culture, race, background, experiences, and values system may differ greatly or somewhat, from her followers (Harris, 2011).

Shamir and Eilam (2005), who deliberately omit consideration of the leader’s values and convictions from their conceptualization of authentic leadership, hypothesize that a leader can be true to him/herself without reaching extraordinary levels of moral development or complying with high standards of ethical conduct. According to Walumbwa et al., (2008) Shamir and Eilam raise the argument of whether authenticity is a good thing in leaders with dysfunctional personalities. Although these and others scholars (e.g., Sparrowe, 2005) have questioned whether authenticity is morally good among leaders with narcissistic or otherwise dysfunctional personalities (Walumbwa et al., 2008), Walumbwa et al. (2008, p. 94) purport “although people may be true to themselves at a modest level of moral development, Kegan

(1982) and Kohlberg (1984) hypothesize they would unlikely be able to possess the capacity for self-reflection and introspection required for a true understanding of the self (or others)". Gardner et al. (2005, pp. 395-396) assert based on characteristics alone narcissistic leaders throughout history are disqualified from being able to satisfying their definition of authentic leadership (Walumbwa et al., 2008).

Drawing on the distinct conceptualizations of authenticity theory, Kernis (2003) and Ilies et al. (2005) propose a concentrated four-component model of authentic leadership that included self-awareness, unbiased processing, authentic behavior/acting, and authentic relational orientation. In describing behavioral and attitudinal attributes of authentic leaders from a life-story perspective, Shamir and Eilam (2005) admits their conceptualization of authenticity says nothing regarding the content of the leader's values, in contrast to numerous other definitions that embrace assumptions of morality. Alternatively however, Shamir and Eilam (2005) advance a narrower focus within the creation of their definition by asserting "(a) the role of the leader is a central component of their self-concept, (b) they have achieved a high level of self-resolution or self-concept clarity, (c) their goals are self-concordant, and (d) their behavior is self-expressive" (p. 399). Avolio and Gardner (2005, p. 321) postulate four characteristics of authentic leaders "(1) rather than faking their leadership, authentic leaders are true to themselves; (2) authentic leaders are motivated by personal convictions; (3) authentic leaders are originals, not copies; and (4) the actions of authentic leaders are based on their personal values and convictions".

From a philosophical purview, authenticity is strongly anchored on moral capacity, values and ethical choices (Harris, 2011). Ciulla (2004) contends given the profound impact that leaders exert on the lives of others - for betterment or harm - there is a clear indication that ethics lie at the very heart of leadership. Progressing the studies of Avolio (2005) and Kanungo and Mendonca (1996), Walumbwa et al. (2008) suggest a philosophical rationale stems from the conviction that all efforts to cultivate leaders must focus attention on their moral development. Walumbwa et al. (2008) postulate impressive empirical evidence suggest positive consequences that accrue in terms of physical and psychological well-being to individuals who achieve relatively high levels of authenticity (Deci & Ryan, 2000; Kernis & Goldman, 2005). Schabram (2009) assert "authentic leaders are those who can lead subordinates while remaining introspective and aware of their ethical and moral obligations" (p. 16). With attention drawn to top executives, Barnard (1949) distinguishes between "personal responsibility" ("an obligation to personally engage in social codes such as abiding in the law and personal commitments") and "organizational responsibility" ("a mandate to morally guide the company internally and in the social context") and recognizes conflict theory and the numerous variables between desires and responsibilities (Schabram, 2009, p. 16).

According to Gardner et al. (2007) the initial attempt to formally define, operationalize and contrast the constructs of leader authenticity and leadership inauthenticity was conducted by Henderson and Hoy (1983). Citing the research of Henderson and Hoy (1983), Gardner et al. (2007) suggest leader authenticity encompasses three components "(1) acceptance of personal and organizational responsibility for actions, outcomes and mistakes; (2) the non-manipulation of subordinates; and (3) the salience of the self over role

requirements” (p. 7). According to Henderson and Hoy (1983, p. 66) salience of self over role “refers to the tendency to behave in a genuine manner relatively unconstrained by traditional role requirements. Such a person is viewed as being real and authentic”. Based on their research, Gardner et al. (2011) postulate its similarity to the theories of authenticity. The investigation discovered leader inauthenticity comprised of low levels of accountability, manipulation of followers, and “salience of the role over self” (Gardner et al., 2011, p. 7). According to Gardner et al. (2011, p. 7) some components slightly overlapped with the dimensions of authenticity proposed by Kernis and Goldman (2006), there also seemed to be some confusion with other constructs, for example “abusive supervision” (as cited in Tepper, 2007), “organizational politics” (as cited in Ferris & Kacmar, 1995) and “accountability” (as cited in Hall, Blass, Ferris, & Massengale, 2004).

In their conceptualization of authentic leadership, Shamir and Eilam (2005) propose “the journey to authentic leadership is influenced by the relevant meaning the leaders are attached to their life experiences and —leaders are authentic to the extent that they act and justify their actions on the basis of the meaning system provided by their life stories” (p. 396). Harris (2011) purports these researchers distinguished authentic leaders from inauthentic leaders by the following criteria “(a) the extent to which individuals embrace their leadership role as an integral component of their self-concept, (b) the degree of values clarification and behavior integration, (c) the alignment between leaders’ goals and convictions, and (d) the congruence between their self-concept and their leadership behaviors” (p. 23).

Implications for Theory, Policy and Practice

Citing the study of Friedman (2006), Harris (2011) proposes authenticity, in conjunction with integrity and creativity, is one of the three most important capacities leaders must possess to be successful in 21st century organizations. Characterized as individuals who possess self-knowledge about their strengths and weaknesses, governed by innate convictions, and achieve a high level of congruence between espoused beliefs and actions (George, 2007; Harvey et al., 2006), authentic leaders and followers can make a fundamental difference in organizations by helping individuals discover meaning and connections at work through greater awareness, restoring and building optimism, confidence and hope, and fostering inclusive structures and positive ethical climates (Harris, 2011, p. 20).

Advancing the work of Dirks and Ferrin (2001), it is proposed that authentic leader behaviors encourage group members’ involvement and participation in the decision making process and promote the sharing of information is also likely to enhance member’s trust (Walumbwa, Luthans, Avey & Oke, 2011). Based on theory, research, and practice, the notion that group trust may contribute to desire outcomes such as citizen behavior and job performance is clearly supported (Walumbwa et al., 2011). To this end, trust is most likely to influence group identity as well as performance (as cited in Jones & George, 1998) even in the face of diversity, because trust perpetuates the free and open exchange of information; which is likely to result in positive group and team experiences (Walumbwa et al., 2011). Trusting relationships strengthen the group’s identity and supports goal accomplishment (Walumbwa et al., 2011).

The authentic leader ultimately strives for authentic and sustained performance beyond expectations in financial, human, social, and psychological aspects of the organization” (Cottrill, 2011, p. 39). In this pursuit, this leader exhibits performance that encompasses respecting people, rather than manipulating them, in order to achieve the goals and objectives of the organization (Gardner & Schermerhorn, 2004). Ideally, authentic leadership cascades down an organization from the top however, Luthans and Avolio (2003) suggest authenticity be manifested within and throughout the organization which will naturally flatten hierarchies and close power distance (Cottrill, 2011).

Shamir and Eilam (2005) argue that authentic leaders are more effective than inauthentic leaders because they are better equipped to make sound choices based on an internal source of strength rooted in their personal convictions. However, these personal convictions according to Shamir and Eilam (2005) are derived from the leader’s experiences and they demonstrate, through the leader’s actions, his or her vision of leadership. In this view of authentic leadership, Shamir and Eilam (2005) contend that the life world experiences and the associated meanings are most significant in fostering authentic leadership development versus learning specific skills or leadership styles (Harris, 2011, p. 23). Authentic leadership varies in definition by researcher, nonetheless can be broadly defined as a normative theory that describes an ideal leader for organizations (Yukl, 2010). Concerned with enhanced organizational performance that naturally implants confidence in the future of organizational functioning and economic state to which it significantly contributes (Chen, 2010), Avolio et al. (2004) theorize organizations in general can benefit from authentic leadership because of a key determinant of organizational commitment. However, Luthans and Avolio (2003) warns that with few clear guidelines, rules, and or direction for action, new rules are needed to address construct ambiguities, lack of clarity, and the vulnerability people and organizations face.

Research Methodology

According to Holloway and Wheeler (2002) qualitative studies permit researchers to explore actions, viewpoints, feeling and experiences in the depth, quality and complexity of a situation by means of a holistic framework in an environment that is uncontrolled. The qualitative methodology encompasses the role of the investigator who then becomes the mechanism used to determine that appropriate data are collected, evaluated, and subsequently interpreted (Eisner, 1991). Such a role involves various attempts to ascertain a convergence of authenticity and corroboration which results in raising the level of integrity of the study (Eisner, 1991). Taking into consideration the emerging understanding that leadership is learned through a variety of naturalistic mechanisms, the works of Bryman (2004) and Conger (2004) purport only through the rigor of an exhaustive qualitative approach can the situated lived experience of leadership be truly revealed (Shamir & Eilam, 2005; Kempster & Cope, 2010). Qualitative research methodology permits researchers to experience confidence in its design as well as assurance in the data gathered (Eisner, 1991). Of the four common approaches within qualitative research, phenomenology, grounded theory, ethnography, historiography, this investigator deemed phenomenological methodology as being the best approach for this individual level of analysis to obtain rich thick data.

While Smith and Eatough (2006) reason phenomenology involves a comprehensive examination of the respondent's life-world, the processes of interpretative phenomenological analysis (IPA) further deepens the scrutiny into how respondents make sense of their peculiar and collective world, and divulges the meanings those particular experiences, events and activities hold for them personally (Smith, 2004). A two-stage interpretation or double hermeneutic process is occupied to intellectually connect style to "hermeneutics and theories of interpretation" (Smith, 2004, p. 53). Smith (2004) asserts "IPA has a theoretical commitment to the person as a cognitive, linguistic, affective and physical being and assumes a chain of connections between people's talk and their thinking and their emotional state" (p. 54). This qualitative study uses the principles of IPA to answer the research questions. The processes of IPA reflect a commitment on behalf of the investigator to understanding the deeper personal perception or account of an object or event, as opposed to merely attempting to produce an objective statement of the object or event itself (Smith & Eatough, 2006).

The goal of qualitative research is not to yield positivist or scientific results as in quantitative research, but to understand the world more deeply from the various perspectives of those in it (Merriam, 2009). As such, unlike objective statistically relevant quantitative data, replication is a component that probably cannot occur without precision within the qualitative methodology (Merriam, 1995). With this understanding, replication of the realism paradigm may not yield same or similar results, but rather different interpretations of the same phenomenon (Merriam, 1995). Further, Lincoln and Guba (1985, p. 288) elucidate instead of reliability in qualitative research, the investigator should be most concerned with "dependability" or "consistency" and must ensure that the "results of a study are consistent with the data collected" (Merriam, 1995, p. 56). Thus, the role of the researcher is of extreme importance in a qualitative design utilizing interviews are used for data collection. In qualitative research, Seidman (1998) purports it is imperative that face-to-face and transcribed interviews, observations, documentation review, etc. are meticulously evaluated to highlight elements that are of particular interest to the research.

Research Design

The research design involved face-to-face interviews facilitated by open-ended questions, and thereby provided the opportunity for each respondent to openly elucidate their innate, personal, specific and unambiguous ideas (Bernard & Ryan, 2010). Merriam (1995, p. 54) posits the realism paradigm postulates a reality that is "constructed, multidimensional, and ever-changing; there is no such thing as a single, muted reality waiting to be observed and measured". Thus in conducting qualitative studies, Seidman (1998) contends data collection would never occur under optimal conditions but rather the uncertainty of natural settings (Gall, Gall, & Borg, 2003). Here, the value of the information received in qualitative research is unmistakably correlated to the proficiency and disposition of the researcher (Patton, 1990) as it all boils down to the researcher's interpretation of someone else's deduced or understood reality (Merriam, 1995). In order to be assured that the design was appropriate and would stand the test of thoroughness, the researcher upheld the *Research Standards for Human Subjects* by initiating and assuring accountability to trustworthiness, rigor, and uniformity (Lincoln & Guba, 1985). Generally, interview-driven studies utilize

open-ended questions and emphasis is placed on the meanings of the proceedings or experiences revealed (Rubin & Rubin, 2005).

According to Golafshani (2003) despite the various schools of thought regarding the applicability of validity to qualitative research, it is still realized that qualifying checks and measures are needed regardless of methodology. In exploring the significance of rigor in qualitative research, Davies and Dodd (2002) distinguish the application of rigor between the methods by asserting “accepting that there is a quantitative bias in the concept of rigor, we now move on to develop our reconception of rigor by exploring subjectivity, reflexivity, and the social interaction of interviewing” (p. 281). Seidman (1998) elucidates qualitative inquiry compels the researcher to follow a reasonable, consistent, and credible course of action that encompasses quality, rigor, and trustworthiness to ensure data received are methodically well documented. Then and only then is trustworthiness maximized which may lead to the replicability of the analysis (Golafshani, 2003). The internal validity of the study was a cognizant concern and established through the use of triangulation.

Guion, Diehl and McDonald (2002) assert validity, in qualitative research, pertains to whether the conclusions of a study are true, if such truth precisely reflects the circumstances, and if a sense is attained that the research inferences are supported by the evidence. Triangulation is a methodology utilized in the rigor of realism paradigms to establish and verify validity by examining research questions from various perspectives (Guion et al., 2002). The benefits of triangulation include “increasing confidence in research data, creating innovative ways of understanding a phenomenon, revealing unique findings, challenging or integrating theories, and providing a clearer understanding of the problem” (Thurmond, 2001, p. 254). In the face of these benefits, Patton (2002) warns a common misunderstanding is that the goal of triangulation is to reach consistency across data sources or methods. According to Guion et al. (2002) due to the comparative strengths of the different triangulation approaches, inconsistencies are most likely. Thus supporting Patton’s (2002) opinion, Guion et al. (2002) postulate such irregularities should not be perceived as abating the evidence, but rather as “an opportunity to uncover deeper meaning in the data” (p. 1) .

With regards to reliability, Merriam (1995, p. 55) asserts “scientific notion of reliability assumes that repeated measures of a phenomenon (with the same results) establishes the truth of the results”. In qualitative research where the human element is involved, measurements and observations can be repeatedly wrong (Merriam, 2009). To this, Seidman (1998) emphasizes that the interview should be conducted in a systematic fashion to the best of the researcher’s ability, even if the environment (that the interviews were being conducted in) is deemed unstable or not the most ideal. In this study four respondents were observed in their work environment for a minimum of three hours. Due to the issue of time, the researcher could not observe the three remaining respondents. Thus, observation data were not analyzed for this investigation and the data collection methodology consisted of one technique, a face-to-face interview.

With a goal to understand particular aspects of the authentic leadership phenomenon in depth, as opposed to whether or not the findings are the general truth of the masses, Merriam (1995) apprises of three unconventional notions of generalizability that are

compatible with the philosophical traditions that govern qualitative research. Concrete universals (Erickson, 1995) postulate that all situations convey insights that surpass the situation from which they originally emerged. Merriam (1995) posits concrete universals determine how humans make sense of their life experiences and how new situations are handled. Human beings will take the learning from one situation and generalize it by applying existing knowledge to other similar situations (Merriam, 1995). Reader or user generalizability is the determination of individuals in a situation to measure the extent of which findings from an empirical investigation can be applied to their situation or not (Merriam, 1995). This study examines each respondent's concrete universals as a way of measuring how experiences are generalized to various real life situations.

Seidman (1998) speaks to the issue of trustworthiness and legitimacy in empirical research and suggests an explicit structure of the interview process should facilitate the process to determine legitimacy. Specifically, Seidman (1998) asserts as long as the researcher (and or interviewer) and the respondents are in agreement as to the composition of the dialogue, then the process ultimately possesses integrity which will contribute to the validity of the investigation. To demonstrate an attempt to preserve interpretive validity of the study, member-checking was conducted. Member-checking is the process whereby verbatim documentation and tentative interpretation of respondent data is submitted to the respondent for plausibility and confirmation the document reflects their precise intent (Merriam, 1995).

As another way to ensure validity, data source triangulation was established by utilizing primary, secondary, and tertiary foundations of data (Denzin, 1970; Guion et al., 2002). These face-to-face interviews were conducted with respondents representing four types of organizational settings which constitutes the establishment of environmental triangulation that tests if changed environmental factors have any significance on findings (Patton, 2002). Selected by convenience sampling, three respondents were identified by the investigator as authentic leaders and these individuals represented the primary foundation of data for this study. Each primary level respondent was asked to identify an authentic leader that s/he knew to participate in the study and represent the secondary foundation of data and each secondary level respondent was asked the same. A total of seven respondents, representing four types of organizations, participated in the study at various times and at various locations. Data source triangulation supports the strength of data set by providing breadth and depth into understanding various perspectives of the phenomenon being studied (Merriam, 1995), and thus facilitates the researcher's ability to make sense of data and information received (Patton, 2002).

Role of the Researcher

The researcher in qualitative research is the primary instrument for data collection and analysis. In this modality, data are mediated through the human instrument rather than through some inanimate inventories, questionnaires, statistical softwares, or computers (Guba & Lincoln, 2005). The specific characteristics that differentiate the human apparatus from data collection instruments are (1) the qualitative researcher is receptive to the context and can adjust research techniques to the surroundings (2) s/he studies the context as well as

respondent (3) s/he expands data to include nonverbal communication, and (4) s/he processes data immediately, elucidates and recapitulates as the study progresses, and can explore deeply into anomalous responses (Guba & Lincoln, 2005). Due to the level of direct involvement a scholar has in qualitative research design (as cited in Husserl, 1931), Moustakas (1994) purports it is most significant that qualitative researchers bracket their thoughts, prior philosophies, and any other suppositions about the phenomenon being studied to eradicate possible biases that could invalidate the research.

The researcher entered into this process with a belief that authentic leadership is merely a theorized concept with no significant data supporting its existence in the real world. This bias is based on direct and indirect witness of what seems to be a large display of corruption across all genres of organizations over the recent years. This bias had to be consciously forced aside to allow the literature to assist in identifying three primary level respondents for the study.

Protection of Participant's Rights

Respondents were initially contacted by telephone for an introduction and or discussion that explained the research project, information as to why they were identified as authentic leaders and selected to participate in the study, and to obtain initially their verbal consent and agreement to participate. Upon receiving verbal consent and agreement, interviews and observation sessions were scheduled and the *Research Participant Information and Consent Form* (Appendix A) was emailed to each respondent. The information and consent form provided an overview of the study and delineated specific procedures (e.g., confidentiality policy, use of data, disseminating and storing of data, contact information, and university information) that would be carried-out by the researcher. Based on the information in this document, respondents were offered the opportunity to formulate questions regarding the research project that would be answered by the researcher at the onset of their interview. A signed *Research Participant Information and Consent Form* was collected from each respondent acknowledging an understanding of the processes and agreement to the procedures.

Sampling

Moving away from broad objective overviews, this study attempts to understand seven independent personal experiences, perceptions, and interpretations engaged in the practice of authenticity. Patton (1990) postulate one of the most common types of a nonprobability sample is called a convenience sample – not because such samples are necessarily easy to recruit, but because the researcher uses specific individuals rather than randomly selecting from the entire population. This qualitative interview-driven study conducted a process for selecting respondents that were identified by the literature, the researcher, as well as the study respondents as authentic leaders, thus establishing a study sample from a position of minimum bias, and is genuine and trustworthy.

The researcher acquired an initial convenience sample of three executive-level professionals, one male and two females, constituting the primary foundation of data, who were between 49 and 70 years of age, had a minimum of ten years of executive leadership experience, and are currently employed in a corporate, educational institution or government organization.

This primary group of respondents was selected and contacted directly by the investigator between June 20, 2013 and June 23, 2013. At this time each respondent was verbally informed about the research, who then was asked to provide verbal consent and permissions to progress the scheduling of interviews and observation sessions. Prior to the scheduled interview and observation sessions, respondents were emailed the *Research Participant Information and Consent Form* (see Appendix A) to allow them the opportunity to formulate questions they might have regarding the study, research process, anonymity, etc. The secondary and tertiary levels respondents were unknown individuals to the researcher and identified by a study respondent. Initial notification was made by telephone by the referring respondent to introduce the researcher, research project and solicit consent to participate.

After receiving verbal consent from the secondary and tertiary level respondents, interview and observation sessions were scheduled, and the information and consent form was emailed by the researcher. Secondary and tertiary level respondents were all female, ranging in age between 41 and 53 years, with a minimum of ten years in concurring leadership and followership functions at a nonprofit organization. A confirmation reminder of the interview was always emailed two days prior to the scheduled interview and observation sessions. All interviews were completed by July 23, 2013.

Instrumentation

As is common in qualitative research, all survey questions were open-ended and based predominantly on the authentic leadership models of Avolio and Garner (2005), Gardner et al. (2005) and Walumbwa et al. (2008) and others. The principles of IPA inspire deeper questioning processes that are concerned with accurately understanding what life and work is like from the perspective of the respondent by endeavoring a figurative walk in the respondent's shoes (Smith, 2004). Due to the particular subjective and exposing nature of the authentic leadership phenomenon, interview questions were deemed to be constructed in a manner that allowed respondents time to articulate their viewpoints in a thorough and complete way. The research design utilized probing, clarifying and elaboration methods as necessary in order to qualify and specify answers substantively.

Protocol questions

Based on the theoretical constructs of Avolio and Garner (2005), Gardner et al. (2005), Walumbwa et al. (2008) and colleagues 25 survey questions were divided into four areas of focus, (1) Leader self-awareness, (2) Relational transparency, (3) Balanced processing, and (4) Internalized moral perspective. The researcher believes that pursuit into

SOBIE 2014

these areas will facilitate a deeper understanding of the authentic leadership phenomenon and provide answers to the research questions.

Interview Survey Battery

I. Leader self-awareness

1. Define the Ancient Greek admonition, "*To thine own self be true...*"
2. Identify three areas of strength and how each strength is used to influence those you interact with and or lead.
3. Describe a past experience of self-exposure.
4. What do you think others learned about you?
5. Specify what you learned about yourself.
6. Identify three areas of weakness and how each weakness is revealed to those you interact with and or lead.
7. Name and explain two elements in your self-regulation plan.
8. What strategies do you use to monitor your own developing constructions (i.e., progressive subjectivity) and how do you track these processes of growth, digression, development, and change?

II. Relational transparency

9. Empower or motivate... Choose your preference. Explain.
10. Describe how you practice transparency amidst those you interact with and or lead.
11. How do you engage others? Or, how do you incorporate the thoughts, perceptions, feelings, concerns, assertions, and experiences of those you interact with and or lead?
12. What methods do you use to ensure the constructions of individuals that you interact with and or lead are presented, clarified, and member-checked in as balanced a way as possible?
13. How do you minimize displays of inappropriate emotions without appearing fake, irrational, or of distorted self?
14. Which is more important to you (a) reinforcing positive outcomes, (b) reducing negative outcomes, or (c) comprehending the cause of the outcome(s)? Explain.
15. How do you elicit personal commitment from your followers?
16. Name the characteristics, behaviors, and qualities you look for in your/a leader?

III. Balanced processing

17. Could a narcissistic leader or leader with another dysfunctional personality disorder satisfy the requirements of an authentic leader? Explain.
18. Dissect your step-by-step process for making sound decisions and explain how this method impact those you interact with and or lead.
19. How does your concrete universals help you facilitate change? Apply to self and others.
20. What is your process for dealing with resistance?

IV. Internalized moral perspective

21. Moral manager or moral person... Choose your preference. Explain.
22. Are you at the beginning stage, median or advanced level of moral development? Explain.
23. What governs your conduct? (A) Internal values (B) External inducements and/or threats (C) Social expectations (D) Rewards. Explain.
24. Explain the impact your inner drive has on your behavior integrity (or level of consistency between values and actions).

25. Describe the moral perspective process or meaning system that guides your decision-making.

Data Collection

According to Strauss and Corbin (1998, p. 11) a qualitative research methodology is a “nonmathematical process of interpretation, carried out for the purpose of discovering concepts and relationships in raw data and then organizing these into a theoretical explanatory scheme”. Through the IPA process, the role of the qualitative researcher is transformed into a dynamic process that facilitates attempts to delve deep into the respondent’s subjective world (Smith, 2004). The data were collected through qualitative phenomenological interviews with seven respondents who were identified as practicing authentic leaders as postulated by the literature, the researcher or four other respondents. Respondents were initially asked to allow two – 2.5 hours for the interview and a minimum of three hours for their observation session.

Five face-to-face interviews were conducted at organization locations and two face-to-face interviews were conducted in home/work environments. While four respondents were observed in their work environment for a minimum of three hours, the concern for running out of time caused the researcher to exclude three remaining observation sessions respondents. Thus, all observation data were excluded from this study. The data collection methodology consisted of one technique which comprised of the face-to-face interview. Face-to-face interviews lasted between 42 and 85 minutes and were recorded on a digital recorder.

This parallel sampling design encompassed three foundations of data. The first level involved a face-to-face interview with three respondents, constituting the primary foundation of data. These primary level respondents were previously known to the investigator and were specifically selected to participate in this study because an exhibition of leadership characteristics and behaviors that, based on the literature, classified them as authentic leaders. At the onset of each interview, respondents reviewed and signed the *Research Participant Information and Consent Form*, were given the opportunity to ask questions regarding the study, were verbally informed of their rights (e.g., right to stop the interview at any time, right to not answer a question, right to ask for clarity, right to contact the university, right to anonymity, etc.), and then each respondent was asked for verbal approval to record the session before proceeding.

According to Onwuegbuzie and Leech (2007) there are multiple aspects of debriefing interviews and observations and/or assessing for their completeness to consider. In the case of this study, the analysis stage began immediately at the end of each interview to allow the respondent to provide feedback on the process itself that would also be analyzed to ascertain areas of agreement as well as areas of divergence (Merriam, 2009). Utilizing the experience they had just engaged in, or their concrete universals, each respondent was also asked to identify an individual they deemed to be an authentic leader to participate in the study as a subsequent level respondent. As a result of this parallel sampling design, secondary and

tertiary foundations of data comprised of respondents who were not previously known the researcher.

After collection, a process Smith and Eatough (2006, p. 338) suggest is a “narrative account of the interplay between the interpretative activity of the researcher and the participant’s account of her experiences in her own words” is the formal process of this stage, data were transcribed into an interview verbatim document and seven respondents were emailed a copy for review, revisions and or approval that the document reflected their interpretations, perceptions and intentions. Due to time constraints, the investigator allowed for five days, upon receipt via email, for respondents to member-check their respective document. The investigator received member-checked verbatim documents between three and seven days after initial receipt. There were no misinterpretations, on behalf of the investigator, on the document(s) and thus, no revisions were required. Member-checking processes were completed by July 31, 2013. Subsequently coding, evaluation of data, and analysis occurred thereafter.

Data Analysis

Of the seven respondents that were interviewed, all seven conducted a member-check. Verbatim interview transcripts were originally given to the respondents for review for accuracy and the determination whether or not any additions, revisions and or deletions were necessary. All transcripts were verified, accepted and thus, approved by the respective respondent. From this point multiple readings of the transcribed interviews are performed by the researcher to recollect, gain appreciation and clarity of the journeys described, understand the interpretations and perceptions of practice, and re-establish intimacy with the purported experiences (Senior et al., 2002).

Jack and Anderson (2002, p. 473) posit the strength of a qualitative research design “lies in its capacity to provide insights, rich details and thick descriptions”. Drawing on and acclimating to the ideologies of IPA, Smith and Eatough (2006) advance the seminal work of Hycner (1985) on the phenomenological analysis of interview data (see Table 2) in six rigorous levels to which all member-checked verbatim documents endured. Qualitative research software was used to help the investigator manage, shape and make sense of the abundance of unstructured information, including open-ended survey responses and the review of the literature. Particularly, NVivo 10 provided the workspace and tools to classify, sort and arrange data and facilitate the investigator’s ability to examine seven data sets, from three foundations of data, and identify isolated (e.g., intra) and collaborative (e.g., inter) themes, glean insights and develop meaningful conclusions in order to answer two research questions.

NVivo 10 software was utilized to help unify, develop, code, and preserve the data and keep track of such the large volume of data. Based on the ground-breaking theory of Hycner (1985), units of meaning are identified in each interview transcription which undergo a deep scrutiny of to categorize reoccurring themes or consistencies of each respondent for the development of a “master-theme list” (created from within each interview). NVivo 10 provided a level of depth and thoroughness to the analysis process which assisted

significantly in developing word clusters, groups, themes, and interpretation of the data within each interview and between the seven interview transcriptions. Smith and Osborn (2008) purport this free textual analysis process allow for highlighting significant words/wording or phrases. However, while NVivo 10 assisted significantly in the study of the data, it was still absolutely necessary for the researcher to methodically scrutinize and reevaluate the data for clarity, accuracy, and conciseness. NVivo 10 software is the storage facility of the data.

Table 2
Interpreting Phenomenological Data

Process of analysis	Level of analysis	Description of analysis
Familiarization/gaining insight	Case review	Conducting multiple readings of the transcribed interviews to recollect, gain appreciation and clarity of the journeys described, understand the interpretations and perceptions of practice, and to become intimate with the experiences (Senior, Smith, Michie & Marteau, 2002).
Immersion and sense-making	Diagnosis of the case	A “free-textual analysis”, according to Smith and Osborn (2008) the process allows for highlighting significant words/wording or phrases. Based on the ground-breaking theory of Hycner (1985), units of meaning are identified from each transcript and then grouped to identify commonalities. Word clusters are color coded in the text and used to identify patterns and themes.
Classification	Developing intra-case themes	In a holistic reflective analysis, Kempster and Cope (2010, p. 15) assert this process involves a deep scrutiny of each interview transcription or case to identify any reoccurring themes or consistencies of each respondent for the development of a “master-theme list” (created from within each interview).
Pattern recognition	Developing inter-case themes	Five “superordinate themes” are created from a meta-level analysis across the seven cases (Kempster & Cope, 2010, p. 15). According to Easterby-Smith, Thrope, and Lowe (2002) this type of examination looks for similarity of experiences and creates links between accounts. This master-theme list consists of five significant and reoccurring themes in the leadership processes and characteristics of

Interpretation/representation	Narrative summary	seven authentic leaders. Smith and Eatough (2006, p. 338) postulate a “narrative account of the interplay between the interpretative activity of the researcher and the participant’s account of her experiences in her own words” is the formal process of this stage. To ensure a pure inductive phenomenological approach; all theoretical propositions were derived from the data. Citing Cope (2005), “this allows the data to speak for itself” (Kempster & Cope, 2009, p. 15).
Explanation and abstraction	Enfolding the literature	The produce a theoretical explanation, the theory-building process enfolded the literature in the analytical discussion of the data (Kempster & Cope, 2009). Yanow (2004) asserts this iterative and comparative process involves appending or making the connection between existing theory and the data (Kempster & Cope, 2009). In doing so, Kempster and Cope (2009, p. 15) posit the research is not only phenomenologically sound but additionally “interpretative and hermeneutic”.

In closing, bracketing and carrying out a phenomenological reduction, according to Hycner (1985, p. 281), refers to suspending the investigator’s interpretation and entering fully “into the world of the unique person being interviewed”. While Hycner (1985) acknowledges a complete and absolute phenomenological reduction is virtually impossible, it is suggested that research data, transcripts and recordings, are reviewed several times with a conscious openness to receiving whatever meanings emerge. To this end, the investigator should admit and document all presuppositions that s/he are aware of (Hycner, 1985). This investigator entered this study with several presuppositions that included, (1) questioning whether authentic leadership really existed; (2) thinking the probability of finding authentic leaders might be minimal; and (3) because of the subjective nature of the construct, what if people believe they are authentic when they are not?

Results

An examination of seven leaders representing four types of organizations was conducted to answer two research questions, (1) identify core characteristics, values, attributes and/or traits of authentic leadership and, (2) identify the processes, behaviors and mechanisms leaders use to develop authentically. Through phenomenological unstructured interview, a questionnaire battery consisting of 25 questions was developed based on the literature and utilized to gather data leading to a deeper understanding of the authentic leadership phenomenon as well as an enhanced understanding of how authentic leaders

develop. Study respondents were not self-identified but rather recognized by another as being an authentic leader and thus, were selected by convenience sample. Theoretical foundation for this research builds on the work of Bruce J. Avolio, William L. Gardner, Fred O. Walumbwa, Fred Luthans, Douglas R. May and colleagues.

Data tracking

Each interview was recorded by digital recorder and categorized by an interview number code and date the interview occurred. During the recorded interviews, no respondent was identified by name, but rather by their interview number code. At the conclusion of the interview sessions respondents openly expressed their interest in the research and appreciation for being considered to participate. However, five of seven respondents made a special request that the recorder stayed on so that their gratitude, appreciation for the research, and respect for the researcher and the manner in which she conducted the study could be a part of the record. The respondents were very encouraging and the researcher expressed her deep gratitude for their time. But the researcher used the five remaining opportunities to inform respondents just how they came to be selected. The researcher's process for selecting respondents was based on the authentic leadership literature. Prior to a respondent's recommendation for the following secondary or tertiary foundations of data, they were asked to review the survey questions and the process they had just experienced. This method assisted in establishing a study sample from a minimum bias perspective. All recorded interviews were transcribed and emailed to the respective respondent to be member-checked. All recorded files were deleted after each respondent provided his or her approval of their transcribed verbatim interview document. The transcribed interview data are stored in a password protected file in the investigator's email and in the NVivo 10 database. All data will be destroyed after seven years of the initial date of this research study. To ensure a pure inductive phenomenological approach, all theoretical propositions were derived from the data. According to Cope (2005) "this allows the data to speak for itself" (Kempster & Cope, 2009, p. 15).

Results and Findings

All seven respondents were given the option to omit any question they felt was intrusive and or uncomfortable with answering as the survey battery comprised of queries that were very personal nature. There were moments of discomfort for almost every respondent. Comments included, "*Oh, my... I have to think about that*", "*This is hard...*", "*Give me a moment...*", "*Hmmm....*", "... "*(silence and deep thought)*"..., "*...I have to expose myself here...*" or "*Wow, that's really deep*"..., however all respondents persevered through moments of discomfort and answered every question on the interview survey battery.

Research Question #1: Identify the core characteristics, values, attributes and/or traits of an authentic leader.

There is one interview question (question five) that overlaps and provides a response to both research questions however, a total of thirteen questions contributed to answering research question one which is regarding the identification of core characteristics, values, attributes and /or traits of an authentic leader. The specific interview questions that address

research question one are questions: one, two, three, five, six, nine, ten, thirteen, sixteen, seventeen, twenty-one, twenty-two, and twenty-three. Six of seven respondents discussed spiritual values being the foundation of how they govern themselves and treat and or behave with others. All seven respondents spoke about family values and the impact those values have on how they function in their world and life. Responses included, “...*the death of my Mother at a very early age I think caused my deep spiritual connection...*”, “*I was raised in a religious family, so I believe my core characteristics and values are deeply rooted my Christianity and belief in Jesus Christ...*”, “...*I’m a Christian, I’m not led by external threats or inducements, I ultimately have to live with myself and answer to a higher power...*”, “...*unapologetically, everything I do, my dealings, my deployment, my relationships, my behaviors are based on my Christian worldview...*”, “...*I have a spiritual foundation that everything I am is built upon...*”, “...*my parents taught me that there are benefits of being true to one’s self...*”, “...*my Mom always said, ‘People will judge you by what you do, not what you say’...*”, “...*based on my spiritual values, I must be open and honest with others...*”, “...*I was taught to be morally just, and so I refuse to lie and cheat or be dishonest in any way...even if it means me losing my job...I refuse to be compromised.*”, “...*my Parents made us self-evaluate, and then evaluate each other, and then we would compare notes. Once we were all close or in the teen years, we did that thing about twice a year. We definitely learned about being true to ourselves and being able recognize our strengths and learning how to build on weaknesses...*”, “...*by being transparent with others, you are modelling for them and at the same time, creating solid relationships*”, “...*the truth regarding myself reveals who I am to others...*”, “...*my beliefs and values speak to who I am*”.

Seven respondents felt that they were grounded in morality and ethicality. Six out of the seven felt they were at the median level of moral development and believed that an advanced level of moral development is not humanly attainable. When asked about weaknesses, five out of seven respondents referred to being impatient as their major flaw. Responses included “...*impatience is my weakness...*”, “...*I am very impatient...*”, “...*I have to work on being more patient*” ... “...*I like fast, accurate responses...I know I have a problem with impatience...*”, “...*point blank...I’m impatient...and I’m working on that...*”, “; while the other two felt “*Being overly emotional, I would say is my weakness*”, “...*you know the answer to this one...I wear my emotions on my sleeve...*”.

Research Question #2: What are the processes, behaviors and mechanisms for developing authentically?

Thirteen questions focused on identifying processes, behaviors and mechanisms used by authentic leaders for ongoing authentic development. Those questions precisely were numbers: four, five, seven, eight, eleven, twelve, fourteen, fifteen, eighteen, nineteen, twenty, twenty-four, and twenty-five. Every respondent articulated specified stratagems or regulated processes in which they use to facilitate change and accomplish organizational goals. Three respondents did not initially feel they had any specified processes, but after talking it though with the researcher and giving the notion some thought they realized they did. For example, “...*I create To Do lists...*”, “...*I keep a logs and lists of things that must get accomplished with their due date...*”, “...*I bring everyone to the table...every idea is important to the process...every team member is essential to the process...*”, “...*I work on relationships with*

people to allow them to see who I am...I guess my process is to expose who I am so that people feel safe and free enough to reveal who they are...”, “...I am careful to be consistent and always follow-through”, “...I show my appreciation... by doing unexpected things, for example, out of the blue I will buy lunch...it is only a small gesture of my appreciation...”, “...I lead by example...”, “...one of my main focuses early on was to get to know my team, each person’s strengths and each person’s weaknesses...my next focus is ongoing...I build on each person’s strengths and work with them to overcome their challenges...”, “...I want my followers to see me for who I am...”, “...I am not induced by outside influences...I am convicted by the values I was raised on...”, “...developing strong relationships is extremely important to me...”, “...my focus is on empowering others. In doing so you give something to someone else that you cannot get back... and it should not be expected” ..., “...I incorporate the views of others in my decision making...”.

“Sincere”, “open”, “authentic”, “honest”, “trusting”, “credulous”, and “straightforward” relationships with others (organizational, societal, personal, spiritual, etc.) was purported as key and essential to the seven respondents. In descriptions of how transparency in relationships is practiced, the intra-case analysis across the seven cases (Kempster & Cope, 2010, p. 15) identified several key words, for example, “trustworthy”, “motivate”, “honesty”, “leader”, “moral”, “openness”, “freedom”, “fairness”, “real”, “manage”, “truth”, “engage”, “influence”, “trust”, “teach”, “inspire”, “develop”, “observe”, and “monitor”. The discussion of processes utilized for minimizing inappropriate emotions revealed various tactics unanimously involved some kind of self-removal method of sorts, for example, “... I closed my door to regroup...”, “...I’ll leave and go for a walk to get myself together”, “...I usually just take a moment in my office...which quite often includes prayer...”, “...I will call out sick, take a mental health day, to regain my equilibrium and come back...because I have to come back...”, “...I usually go out to my car to be alone, and to pull myself back together...”, “...I will use vacation or sick leave if I need to...”, “...leave...whether it’s for a few moments, a few hours, or a day...”, to avoid displays of inappropriate behaviors or appearing fake. A superordinate theme, revealed in the meta-level analysis across the seven cases (Kempster & Cope, 2010, p. 15), is isolation is used as a tactic used to regain self-control.

Word clusters were color coded in the inter-text analysis and used to identify patterns and themes within each interview document. After processing the data several times, patterns started unfolding and emerging themes *finally* started to become apparent. According to Kempster and Cope (2010) this inter-text process identifies the most significant patterns and the most significant themes presenting in each verbatim interview manuscript. In an intra-case analysis, five “superordinate themes” were created from the meta-level examination across the seven cases (Kempster & Cope, 2010, p. 15). Easterby-Smith et al. (2002) postulate this type of examination looks for similarity in experiences and creates links between interpretations. Such a level of scrutiny progresses a composite description into the significance and fundamental nature of the phenomenon being studied (Easterby-Smith et al., 2002).

In discovering the answer to research question one, *identify the core characteristics, values, attributes, and/or traits of an authentic leader*, repetitious patterns and themes formulated around particular characteristics and values found it unanimously imperative to

the respondents in this study that authentic leaders must (1) be aware of and true to oneself, (2) be trustworthy, open, and transparent in relationships with others, (3) walk the talk, (4) function with grounded morality and ethicality in life and the world, and (5) attend to and take care of the self. To answer research question two, *what are the processes, behaviors and mechanisms for developing authentically?*, repetitive patterns and themes signified authentic leaders: (1) focus on empowering followers, (2) are openness in relationships to encourage to same, (3) use lists, schedules, technology, and other devices to maintain stability, (4) use isolation as a procedure that allows them to regain composure, and (5) believe morality is the core of life.

Analyzing the data obtained from seven transcribed interviews in the rigor of a meta-level analysis, five superordinate themes emerged:

- 1. Transparency.** The findings in this research suggest authentic leaders are individuals who believe in order to lead one must be real, open, and genuine. It was purported that this level of realness and openness offers others the freedom to reveal their truths, thoughts, challenges and feelings.
- 2. Highly structured.** The study findings suggest authentic leaders are innately structured and this deep level of organization governs their behaviors, both subjectively and objectively. The use schedules, technology, isolation are examples of how authentic leaders systematically stay on assignment and maintain or retain balance. *“Decision-making”*, *“facilitating change”*, *“engaging followers”*, *“leading teams”*, and *“developing staffs”* are processes that involve others which authentic leaders will systematically, consciously and unconsciously, have step-by-step details for. Further, authentic leaders consistently monitor their emerging constructions to analytically ensure ongoing growth, development, and transformation.
- 3. Morality and ethicality.** Findings suggest authentic leaders are moral agents with an allegiance to upholding high moral and ethical standards. The six of seven respondents purported, at this time in their life, they are in the median range of moral development. This stage was emphasized as *“under construction”*, and defined as a process that continues to develop as one’s life journey continuously develops. The majority (all but one) of the respondents felt that the advanced level of moral development is not humanly attainable.
- 4. Grounded values orientation.** Study results suggest authentic leaders are grounded family and spiritual values. The values orientation of all seven respondents was demarcated as *“unwavering”* and *“motivated by personal convictions and not outside influences”* developed by *“family”*, *“parent(s)”*, and *“Christianity”*. This value system that is postulated as grounded in *“fairness”*, *“truth”*, and *“honesty”*.
- 5. Spirituality.** The findings in the research study purports authentic leaders are spiritual beings. Seven respondents informed they have a solid spiritual foundation. This spirituality is accredited to that which has made them the person they are, governs how they treat others, directs their behaviors and actions, and impacts their overall worldview.

Chapter 4 includes a data analysis of seven face-to-face in-depth interviews that queried a survey battery of 25 survey questions, derived from and based on the authentic leadership literature. The methodology of the analysis was guided by the theories of Hycner (1985) which supplemented a richness and depth of the interpretation of the data. The general purpose of the research, in conjunction with finding the answers to the research questions, was to add to the body of literature. The research findings postulated five themes which includes: transparency, highly structured, morality and ethicality, grounded values orientation, and spirituality. Chapter 5 consists of future research potential, general discussion of the research, and the conclusion.

Discussion

An examination of seven executive leaders, from four different types of organizations was conducted to (a) understand and identify the core characteristics, values, attributes and/or traits of authentic leadership, and (b) identify the processes, behaviors and mechanisms that leaders use for developing authentically. As stated, the data were generated through face-to-face phenomenological interview-driven method with leaders from corporate, nonprofit, educational institution, and government organizations who were identified by the literature, researcher, or a respondent as an authentic leader. The IPA process provided a greater depth of evaluation which led to a better understanding of the authentic leadership experience which was then applied to answer the research questions.

Repetitious patterns and themes that were formulated around identifying specific characteristics and values in authentic leaders suggest these leaders (1) are aware of and true to the self, (2) are authentic, open, and transparent in relationships with others, (3) walk the talk, (4) function with high morality and ethicality in life and the world, and (5) attend to, nurture and take care of the physical and mental self. The repetitive patterns and themes formulated around behaviors, mechanism and processes suggest authentic leaders: (1) are focused on empowering others, (2) function with an open and engaging manner, (3) utilize schedules, technology, and other devices to keep track, (4) isolate themselves to regain composure, and (5) believe morality is the foundation of life.

Limitations, Conclusions and Implications

As in all research, limitations exist in this study which initially have to do with its qualitative nature that suggests replication may be difficult to reenact. Another limitation is regarding the study sample which included six female respondents and one male respondent or a configuration that by no means recommends generalizability to the larger population. While Threinen (2009) purports a relative dearth of research on authentic leadership in organizations (only fifteen studies completed between 2004 and 2007) (as cited in Barling et al., 2011), this study builds upon the theoretical foundations of authentic leadership, adds an examination of the construct in a real world organization to the body of literature, and opens the door for deeper more extensive future study.

Authentic leadership is theorized as an imperatively important leadership, however the literature seems to have many variants to describing the characteristics and behaviors of

authentic leaders. Furthermore, the literature is virtually silent regarding the processes for becoming an authentic leader, identifying the mechanisms used by authentic leaders or the methods utilized to develop authentic followers. To this end, future research into the phenomenon of authentic leadership must investigate the characteristics, traits, attributes, behaviors, processes and mechanisms of authentic leaders used in the real world setting. Future studies might also examine how “leaders distil their ‘storied construction of reality’” to extrapolate meaning that may enrich and serve purpose (Shamir & Eilam, 2005, p. 406); how authentic leaders select and organize their personal legends in significant and coherent ways that result in them becoming “authors of their own lives in the sense of creating new and improved versions of themselves” (Bennis, 2003, p. 334); identify what exactly transpires for followers to authenticate the leader; and delineate how authentic leadership, considered to be a solid representative of a stable workforce, functions in a constantly changing world. Shamir and Eilam (2005) contend authentic leadership does not rely on skill and behavioral developments at all but rather complete acute awareness of self-concept which builds from a unique internal compass comprised from implicit beliefs, values and principles (George, 2009). If this is so, future research might query the processes for developing and testing the personal meaning system for flaws or discern how authentic leaders avoid the dangers of power.

In sum, scholars regard numerous frameworks as credible authentic leadership theories with the potential to prepare organizations all over the world for the unprecedented challenges of today and in the future. These hypotheses suggest the imperativeness that future research investigate how authentic leaders may possibly influence various individual and organizational outcomes (Threinen, 2009). While authentic leadership is related to cognitions and behaviors not only at the individual level but also at the group or organizational level, implications for future study could advance leader-follower associations (as cited in Moore, 2007), organizational environment (as cited in McMurray, 2010), authentic performance (as cited in Brennan, 2010), authentic organizations (as cited in George, 2003), integrative model of authentic leadership (as cited in Ceri-Booms, 2010), quantifying the value of authenticity and balance (as cited in Goodsell, 2010), and expanding the understanding of authenticity on ethnicity, race and gender (Harris, 2010; Cottrill, 2011). Since there are gaps in the literature that measure the impact of authentic leader and follower relationships on organizational outcomes, as well as progress the understanding of how authentic leaders develop authentic followers, perhaps longitudinal analyses may present a sound way to examine these characteristics over the long term.

References

- Adorno, T. W. (1973). *The Jargon of Authenticity*. Translated by Knut Tarnowski and Frederic Will. Evanston, IL: Northwestern University Press.
- Aguilera, R. V. (2005). Corporate governance and director accountability: An institutional comparative perspective. *British Journal of Management*, 16, S39-S53.
- Alban-Metcalf, J. & Alimo-Metcalf, B. (2007). Development of a private sector vision of the (engaging) transformational leadership questionnaire. *Leadership & Organization Development Journal*, 28(2), 104-121.

- Anderson, C. (2005). A qualitative study of the effectiveness of a leadership development program on community sustainability and the activities that influence community improvement in the context of sustainable development. *ProQuest Dissertations and Theses*, p. 225. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/305342346?accountid=13479>
- Avolio, B. J. (2005). *Leadership development in balance: Made/born*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Avolio, B. J., & Gardner, W. L. (2005). Authentic leadership development: Getting to the root of positive forms of leadership. *Leadership Quarterly*, *16*(3), 315-338.
- Avolio, B. J., Gardner, W. L., Walumbwa, F. O., Luthans, F. & May, D. R. (2004). Unlocking the mask: A look at the process by which authentic leader's impact follower attitudes and behaviors. *Leadership Quarterly*, *15*, 801-823.
- Avolio, B. J., & Luthans, F. (2006). The high impact leader: Authentic, resilient leadership that gets results and sustains growth. New York, NY: McGraw-Hill.
- Barling, J., Christie, A., & Hopton, A. (2011). Leadership. In S. Zedeck (Ed.). *APA handbook of industrial and organizational psychology. Vol. 1: Building and developing the organization* (pp. 183-240). Washington, DC: American Psychological Association.
- Bass, B. M., & Steidlmeier, P. (1999). Ethics, character, and authentic transformational leadership. *Leadership Quarterly*, *10*, 181-217.
- Begley, P. T. (2004). Understanding valuation processes: Exploring the linkage between motivation and action. *International Studies in Educational Administration*, *32*(2), 4-17.
- Bennis, W. (2003). *On becoming a leader*. Cambridge, MA: Perseus Publications.
- Bernard, H., & Ryan, G. (2010). *Analyzing qualitative data: Systematic approaches*. Los Angeles, CA: Sage Publications.
- Bhindi, N., Riley, D., Smith, R., & Hanson, J. (2008). *Authentic leadership in education: A cross country reality?* Paper presented at Enhancing the Heart, Enhancing the Mind, New Zealand.
- Bjugstad, K., Thach, E. C., Thompson, K. J., & Morris, A. (2006). A fresh look at followership: A model for matching followership and leadership styles. *Journal of Behavioral and Applied Management*, *7*(3), 304-311,313-319. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/196732400?accountid=13479>
- Brennan, P. T. (2010). Pursuing success without scandal: Exploring the relationship between transformational and authentic leadership. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/518653228?accountid=13479>
- Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes*, *97*, 117-134.
- Ceri-Booms, M. (2010). An empirical study on transactional and authentic leaders: Exploring the mediating role of trust in leader on organizational identification. *The Business Review (14)*2, 235-243.
- Chan, A., Hannah, S. T., & Gardner, W. L. (2005). Veritable authentic leadership: Emergence, functioning, and impacts. In W. L. Gardner, B. J. Avolio & F. O.

- Walumbwa (Eds.). *Authentic leadership theory and practice: Origins, effects and development*, (pp. 3-41). Oxford, UK: Elsevier Science
- Chanchal, S. (2009). Exploring "workplace spirituality" as a concept of value for the contemporary practice of public administration. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/305065613?accountid=13479>
- Chen, C. (2011). The mediating effect of employees' experience of inclusion and the moderating effect of individual work values on the relationship of authentic leadership style and organizational commitment. *Alliant ProQuest. Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/863203879?accountid=13479>
- Ciulla, J. B. (Ed.). (2004). *Ethics, the heart of leadership*. Westport, CT: Greenwood Publishing Group.
- Cottrill, K. R. (2012). Antecedents and outcomes of inclusion: Exploring authentic leadership, organizational climate for ethics, organization-based self-esteem, and organizational citizenship behaviors. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/927909447?accountid=13479>
- Creswell, J. W. (2007). *Qualitative inquiry & research design* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Creswell, J. W. (2009). *Research design* (3rd ed.). New Delhi, India: SAGE Publications.
- Dann, P. L. (2008). Emergent leadership models and generative leadership: Research toward new leadership paradigms in nonprofit organizations. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/304838848?accountid=13479>
- Davies, D., & Dodd, J. (2002). Qualitative research and the question of rigor. *Qualitative Health Research*, 12(2), 279-289.
- Dealy, M. D., & Thomas, A. B. (2006). *Managing by accountability: What every leader needs to know about responsibility, integrity – and results*. Westport, CT: Praeger.
- Denzin, N. K. (1970). *Sociological methods: A sourcebook*. London: Butterworths Publishing.
- Dychtwald, K., Erickson, T. J., & Morison R. (2006). *Workforce crisis: How to beat the coming shortage of skills and talent*. Boston, MA: Harvard Business Press.
- Eagley, A.H. (2005). Achieving relational authenticity in leadership: Does gender matter?. *Leadership Quarterly*, 16(3): 459-474.
- Eagly, A. H., & Carli, L. L. (2007). Women and the labyrinth of leadership. *Harvard Business Review*, 85(9), 62-84.
- Easterby-Smith, M., Thorpe, R., & Lowe, A. (2002). *Management research: An introduction* (2nd ed.). Shoreditch, London: Sage Publications.
- Eisner, E. (1991). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. New York, NY: Macmillan.
- Erickson, R. J. (1995). The importance of authenticity for self and society. *Symbolic Interaction*, 18(2), 121-144.
- Etzioni, A. (1968). *The active society: A theory of societal and political processes*. London: Collier-Macmillan.

- Fields, D. (2007). Determinants of follower perceptions of a leader's authenticity and integrity. *European Management Journal*, 25(3), 195-206.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational research: An introduction*. (7th ed.). Boston, MA: A & B Publications.
- Gardner, W. L., Avolio, B. J., Luthans, F., May, D. R., & Walumbwa, F. O. (2005). Can you see the real me?: A self-based model of authentic leader and follower development. *Leadership Quarterly*, 16, 343-372.
- Gardner, W. L., Avolio, B. J., & Walumbwa, F. O. (2005). Authentic leadership development: Emergent trends and future directions. In W. L. Gardner, B. J. Avolio, & F. O. Walumbwa (Eds.), *Authentic leadership theory and practice: Origins, effects and development*: 387-406. Oxford, UK: Elsevier Science.
- Gardner, W. L., Cogliser, C. C., Davis, K. M. & Dickens, M. P. (2011). Leadership: A review of the literature and research agenda. *Leadership Quarterly*, 22(6), 1120-1145.
- Gardner, W. L. & Schermerhorn Jr., J.R. (2004). Unlashing individual potential: Performance gains through positive organizational behavior and authentic leadership. *Organizational Dynamics*, 33(3), 270-281.
- George, B. (2003). *Authentic leadership: Rediscovering the secrets to creating lasting value*. San Francisco, CA: Jossey-Bass.
- George, B. & Sims, P. (2007). *True north: Discover your authentic leadership*. San Francisco, CA: Wiley Publications.
- George, B., Sims, P., McLean, A. N., & Mayer, D. (2007). Discovering your authentic leadership. *Harvard Business Review*, 85(2), 129-138.
- Goffee, R. & Jones, G. (2009). Authentic leadership. *Leadership excellence* (26)7, 17-24.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *Qualitative Report*, 8(4), 597-607. Retrieved from <http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>
- Goldman, B. M. & Kernis, M. (2002). The role of authenticity in healthy psychological functioning and subjective well-being. *Annals of the American Psychotherapy Association*, 5, 18-20.
- Goodsell, K. (2010). Authenticity and balance in leadership among women executives. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/305229620?accountid=13479>
- Greenberg, L., Rice, L. & Elliott, R. (1993). *Facilitating emotional change: The moment-by-moment process*. New York, NY: Guilford Press.
- Guion, L. A., Diehl, D. C., & McDonald, D. (2002). Triangulation: Establishing the validity of qualitative studies. Retrieved from <http://edis.ifas.ufl.edu/fy394>
- Harris, W. W. (2011). *Achieving personal and leadership authenticity in the workplace: Understanding the lived experiences of African American women leaders*. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/873552962?accountid=13479>
- Heidegger, M. (1962). *Being and time*. Translated by John Macquarrie & Edward Robinson. London: Harper & Row.
- Hofman, R. E. (2007). *Conscious-authentic leadership in the workplace: Its impact on employee behavior and specific organizational outcomes*. (Order No. 3268246, The Claremont Graduate University). *ProQuest Dissertations and Theses*, 178-n/a. Retrieved from <http://0->

- search.proquest.com.library.regent.edu/docview/304891338?accountid=13479.
(prod.academic_MSTAR_304891338).
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage Publications, Inc.
- Holloway, I. & Wheeler, S. (2002). *Qualitative research in nursing*. Oxford, UK: Blackwell Science, Ltd.
- Hutchinson, D. S. (1995). Ethics. In J. Barnes (Ed.). *The Cambridge companion to Aristotle* (pp. 195-232). Cambridge, UK: Cambridge University Press.
- Hycner, R.H. (1985). Some guidelines for the phenomenological analysis of interview data. *Human studies*, 8(3), 279-303.
- Ilies, R., Morgeson, F. P., & Nahrgang, J. D. 2005. Authentic leadership and eudaemonic well-being: Understanding leader-follower outcomes. *Leadership Quarterly*, 16: 373-394.
- Ivancevich, J., Konospake, R., & Matteson, M. (2008). *Organizational behavior and management*. New York, NY: McGraw-Hill Irwin.
- Jack, S. L., & Anderson, A. R. (2002). The effects of embeddedness on the entrepreneurial process. *Journal of Business Venturing*, 17(5), 467-487.
- Jones, G. R., & George, J. M. (1998). The experience and evolution of trust: Implications for cooperation and teamwork. *Academy of Management Review*, 23(3), 531-546.
- Kemmis, S. (1980). The imagination of the case and the invention of the study. In H. Simons (Ed.). *Towards a science of the singular* (pp.). Norwich, CT: CARE.
- Kempster, S. & Cope, J. (2010). Learning to lead in the entrepreneurial context. *International Journal of Entrepreneurial Behavior & Research*, 16(1), 5-34.
- Kernis, M. H. 2003. Toward a conceptualization of optimal self-esteem. *Psychological Inquiry*, 14, 1-26.
- Kernis, M. H., & Goldman, B. M. (2006). A multicomponent conceptualization of authenticity: Theory and Research. In M. P. Zanna (Ed.). *Advances in experimental social psychology* (Vol. 38, pp. 283-357). San Diego, CA: Academic Press.
- Kirkpatrick, S. & Locke, E. A. (1991). Leadership: Do traits matter? *Academy of Management Executive*, 5(2), 48-60.
- Kliuchnikov, A. (2011). Leader's authenticity influence on followers' organizational commitment. *Emerging Leadership Journeys*, 4(1), 70-90.
- Kretzchmar, L. (2007). The formation of moral leaders in South Africa: A Christian-ethical analysis of some essential elements. *Journal of Theology for Southern Africa*, 128, 18-36.
- Ladkin, D. & Taylor, S. (2010). Enacting the 'true self': Towards a theory of embodied authentic leadership. *Leadership Quarterly*, (21), 64-74.
- Liedtka, J. (2008). Strategy making and the search for authenticity. *Journal of Business Ethics* (80)2, 237-248 Retrieved from <http://0-www.jstor.org.library.regent.edu/stable/25482139>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.
- Lofland, J. & Lofland, L. H. (1995). *Analyzing social settings: A guide to qualitative observation and analysis* (3rd ed.). Belmont, CA: Wadsworth
- Lorenzi, P. 2004. Managing for the common good: Prosocial leadership. *Organizational Dynamics*, 33, 282-291.

- Luthans, F. & Avolio, B. J. (2003). Authentic leadership development. In Cameron, K. S., Dutton, J. E., Quinn, R.E. (Eds.). *Positive organizational scholarship: Foundations of a new discipline*. San Francisco, CA: Berrett-Koehler
- Luthans, F., Youssef, C., & Avolio, B. (2007). *Psychological capital: Developing the human competitive edge*. Oxford, UK: Oxford University Press.
- Maccoby, M. (2004). The power of transference. *Harvard Business Review*, 82(9), 76-85.
- Mahoney, T. (2009). Exploring authentic leadership: A narrative case study. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/305167769?accountid=13479>
- McMurray, A. P. (2010). Exploring the essence of relational leadership in the role of university president. *ProQuest Dissertations and Theses*, Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/288309193?accountid=13479>
- McMurray, A. J., Pirola-Merlo, A., Sarros, J. C., & Islam, M. M. (2010). Leadership, climate, psychological capital, commitment, and wellbeing in a non-profit organization. *Leadership & Organization Development Journal*, 31(5), 436-457. doi: 10.1108/01437731011056452
- Merriam, S. (1995). What can you tell from an N of 1?: Issues of validity and reliability in qualitative research. *PAACE Journal of Lifelong Learning*, 4, 50-60.
- Merriam, S. B. (2009). *Qualitative Research: A Guide to Design and Implementation*. San Francisco, CA: John Wiley & Sons.
- Moore, E. M. (2007). The impact of leadership style on organizational effectiveness: Leadership in action within united way of America. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/304723158?accountid=13479>
- Moore, S. (2008). It's not just nice, it's necessary: Authentic leadership in the new economy. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/89231395?accountid=13479>
- Munhall, P. (1989). Philosophical ponderings on qualitative research methods in nursing. *Nursing Science Quarterly*, 2 (1), 20-28.
- Novicevic, M. M., Hayek, M., & Fang, T. (2011). Integrating Barnard's and contemporary views of industrial relations and HRM. *Journal of Management History*, 17(1), 126-138. doi: 10.1108/17511341111099547
- Onwuegbuzie, A. J., & Leech, N. L. (2005). The role of sampling in qualitative research. *Academic Exchange Quarterly*, 9, 280-284.
- Onwuegbuzie, A. J., & Leech, N. L. (2007). Sampling designs in qualitative research: Making the sampling process more public. *Qualitative Report*, 12(2), 238-254.
- Patton, M. Q. (1990). *Qualitative Evaluation and Research Methods* (2nd ed.). Newbury Park, CA: Sage Publications, Inc.
- Patton, M. Q. (2002). *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage Publications.
- Peterlin, J., Penger, S., & Dimovski, V. (2011). Authentic leadership as the promising link between western and eastern management practices: The case of Slovenian company. *International Business & Economics Research Journal (IBER)*, 8(12), 87-98.
- Roche, M. (2010). Learning authentic leadership in New Zealand: A learner-centred methodology and evaluation. *American Journal of Business Education*, 3(3), 71-79.

- Rubin, H., & Rubin, I. (2005). *Qualitative interviewing: The art of hearing data* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potential: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166.
- Sartre, J. P. (1956). *Being and Nothingness*. Translated by Hazel E. Barnes (pp. 330-356). New York, NY: Philosophical Library Press.
- Schabram, K. (2009). To thine own self be true: Authentic leadership and managerial training. *ProQuest Dissertations and Theses*, Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/807619523?accountid=13479>
- Seidman, I. (1998). *Interviewing as qualitative research*. (2nd ed.). New York, NY: Teachers College Press.
- Senior, V., Smith, J. A., Michie, S., & Marteau, T. M. (2002). Making sense of risk: an interpretative phenomenological analysis of vulnerability to heart disease. *Journal of Health Psychology*, 7(2), 157-168.
- Shamir, B. & Eilam, G. (2005). What's your story?: A life-stories approach to authentic leadership development. *Leadership Quarterly*, 16, 395-417.
<https://www.courses.fas.harvard.edu/~soc186/AssignedReadings/Shamir-Stories.pdf>
- Scott, H. G. (2010). Women leaders in protestant, evangelical nonprofit organizations: Individual perceptions regarding congruity between gender and leadership roles. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/861751500?accountid=13479>
- Silver, G. (2008). A qualitative examination: Ways of leading among non-profit executives. *ProQuest Dissertations and Theses*. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/304319031?accountid=13479>
- Smith, J. A. (2004). Reflecting on the development of interpretative phenomenological analysis and its contribution to qualitative research in psychology. *Qualitative Research in Psychology*, 1(1), 39-54.
- Smith, J.A. & Eatough, V. (2006). Interpretative phenomenological analysis. In G. M. Breakwell, S. Fife-Schan, S. Hammond, & J. A. Smith (Eds.). *Research methods in psychology* (3rd ed.). Newbury Park, London: Sage Publications.
- Smith, J. A. & Osborn, M. (2008). Interpretative phenomenological analysis. In J. A. Smith (Ed.). *Qualitative psychology: A practical guide to research methods*, (2nd ed). Newbury Park, London: Sage Publications.
- Sparrowe, R. T. (2005). Authentic leadership and narrative self. *Leadership Quarterly*, 16, 419-439.
- Stewart-Wherry, H. M. (2012). Authentic leadership, leader-member exchange, and organizational citizenship behavior: A multilevel analysis. *Theses, Dissertations and Student Scholarship: Agricultural leadership, Education and Communication Department*, Paper 91. Retrieved from <http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1091&context=aglecdiss&sei-redir=1&referer=http%3A%2F%2Fwww.google.com>
- Stogdill, R. M. (1974). *Handbook of leadership*. New York, NY: Free Press.
- Strauss, A., & Corbin, J. (1998). *Basics of Qualitative Research: Techniques and procedures for developing grounded theory*. (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Sudman, S., & Kalton, G. (1986). New developments in the sampling of special populations. *Annual Review of Sociology*, 12, 401-429.

- Threinen, N. (2009). Ways of learning and leadership: Midlife women in communities of practice. Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/250907590?accountid=13479>
- Thurmond, V. (2001). The point of triangulation. *Journal of Nursing Scholarship*, 33(3), 254–256.
- Toor, S. R. & Ofori, G. (2008). Leadership for future construction industry: Agenda for authentic leadership. *International Journal of Project Management*, 26, 620-630.
- Trilling, L. (1972). *Sincerity and authenticity*. Cambridge, MA: Harvard University Press.
- Vella-Brodrick, D., & Page, K. (2009). *Positive leadership: Accentuating and cultivating human resources*. Prahran, VIC: Tilde University Press.
- Verbos, A. K., Gerard, J. A., Forshey, P. R., Harding, C. S., & Miller, J. S. (2007). The positive ethical organization: Enacting a living code of ethics and ethical organizational identity. *Journal of Business Ethics*, 76(1), 17-33.
- Walumbwa, F. O., Avolio, B. J., Gardner, W., Wernsing, T., & Peterson, S. (2008). Authentic leadership: Development and validation of a theory-based measure. *Journal of Management*, 34(1), 89-126.
- Walumbwa, F., Christensen, A., & Hailey, F. (2011). Authentic leadership and the knowledge economy: Sustaining motivation and trust among knowledge workers. *Organizational Dynamics*, 40(2), 110-132. Retrieved on August 1, 2011 from ABI/INFORM Global. (Document ID: 2380733661).
- Walumbwa, F. O., Luthans, F. Avey, J. B. & Oke, A. (2011). Authentically leading groups: The mediating role of collective psychological capital and trust. *Journal of Organizational Behavior* 32, 4-24.
- Wildemuth, B. M. (1993). Post-positivist research: two examples of methodological pluralism. *Library Quarterly*, 63, 450-468.
- Yanow, D. (2004). Translating local knowledge at organizational peripheries. *British Journal of Management*, 15(S1), S9-S25.
- Yukl, G. (2010). *Leadership in organizations* (7th ed.). Upper Saddle River, NJ: Prentice Hall.
- Zhu, W. (2006). *Authentic leadership and follower moral decision intention: Role of follower moral identity*. The University of Nebraska - Lincoln. *ProQuest Dissertations and Theses*, 183-183 Retrieved from <http://0-search.proquest.com.library.regent.edu/docview/305274989?accountid=13479>. (305274989).

APPENDIX A

RESEARCH PARTICIPANT INFORMATION AND CONSENT FORM REGENT UNIVERSITY School of Business & Leadership

Title of Study

Understanding the degree authentic leadership is demonstrated in organizations: A multi-level examination of executive leaders and their followers

Request for your participation

You are invited to voluntarily participate in a research study, conducted by Principle Investigator Rochelle KP. Thomas. This research project is part of the academic requirements for earning a PhD degree from Regent University.

Purpose of the study

The purpose of this study is to investigate and measure the extent in which authentic leadership is demonstrated in three types of organizations - nonprofit, corporate and government – by executive leaders and their followers. The characteristics of an authentic leader is one who maintains positive energy, high sense of integrity, moral character and self-discipline, clear purpose, concern for others, confidence, hope, optimism, resilience, thoroughness in decision-making, and high personal values. It is believed that this study will provide evidence of the degree in which the authentic leadership construct is purposefully permeated in the daily leadership and business practices of executive leaders and their followers.

Why have you been asked to take part?

The authentic leadership concept, comprising of leader self- awareness, relational transparency, internalized moral perspective, and balanced processing in decision-making, will be measured by an initial sample of five executive leaders from various types of organizations with a minimum of 15 years of leadership experience. You have been asked to participate in this study because you have been identified by the Principal Investigator or a research participant as an authentic leader. It is of belief that you are specifically appropriate to provide valuable data for this study.

What will your participation encompass?

Your participation will initially involve the review of this consent form and any preliminary questions you might have regarding this study. A face-to-face interview and an observation session will be conducted with you as the subject. A self-defining autobiographical statement of personal character, behaviors and attitudes can be substituted for the observation session. You will be asked to recommend an individual in which you believe performs authentically in their day-to-day leadership and/or business practice to participate in this study. That person will be contacted by the Principal Investigator only after you have informed them of your recommendation and have received their initial consent. Your verbatim face-to-face interview document and observation document (if

SOBIE 2014

applicable) will be forwarded to you via email for review and approval. The total time commitment being requested of each participant is approximately 2 – 2.5 hours.

Risks and discomforts

There are no known risks associated with this research. However, there may be some discomforts related to the research as interview questions are very personal in nature and query personal character, strengths and weaknesses, internal processing methods, and handling relationships with others. At any point in time, if a question feels uncomfortable, you are permitted to request that the question be withdrawn.

Potential benefits

There are no known benefits to you personally that would result from your participation in this research. However, in the face of an uncertain and constantly shifting external environment, institutions and organizations alike must seek to operate efficiently, routinely and effectively through positive forms of leadership led by key organizational leaders with high levels of integrity, and consistent values and principles to restore confidence in all levels of organizational leadership. This research may add to the body of literature and help answer the imperative call for authentic leadership intervention to propagate an organizational leadership behavior that encompasses practical and authentic performance standards, moral and ethical leadership and followership development to influence followers and organizational outcomes.

Protection of confidentiality

Data and information provided by you, the research participant, is confidential. Your identity and privacy are protected and will never be revealed without retrieving your additional explicit consent. The information and data you provide is for specified research purposes only and will not be used in any manner incompatible with these purposes. Specifically, no personal identifiers, data or information provided for this study will be used for non-research purposes. Your identity will not be revealed in any publication resulting from this study.

Voluntary participation

Your participation in this research study is absolutely voluntary. You may choose not to participate and you may withdraw your consent to participate at any time. You will not be penalized in any way should you decide not to participate or to withdraw from this study. Your decisions about participating in a study, responding to specific questions, or discontinuing participation will be respected without question.

Contact information

If you have any questions or concerns about this study, please do not hesitate to contact Rochelle KP. Thomas, Principal Investigator at cell: 917. 903.0462; home: 631 893-9022; or email: rochtho.mail@regent.edu. If you have any questions or concerns about your rights as a research

SOBIE 2014

participant, please contact Dr. Emily Cabanda at Regent University Human Subjects Review Board at ecabanda@regent.edu.

Consent

I have read this consent form and have been given the opportunity to ask questions. I give my consent to participate in this study.

Participant signature _____ Date: _____

Participant email address: _____

Principal Investigator signature _____ Date: _____

Decision Support Systems

Ruchi Bhade, Kennesaw State University

Abstract

The aim of this research paper is understanding what a Decision Support System (DSS) is, its types, how do different types of DSS work and their applications. A DSS is an automated/computerized system that enables the top executives or managers to take correct decisions at correct time by providing them with a full-fledge summary of analyzed data. Thus basically, a DSS enhances the decision making process effectively so as to reduce the tendency of failure by suggesting an array of possible decisions that can be taken by the managers/respective authorities for an organization to succeed. This paper discusses the definition, working and applications of different types of DSS like Group Decision Support Systems (GDSS), Organizational Decision Support Systems (ODSS), Intelligent Decision Support Systems (IDSS), Web-Based Decision Support Systems (WDSS), Model-Based Decision Support Systems (MDSS), Self evolving Decision Support System (SEDSS) and Knowledge-Based Decision Support Systems (KDSS).

Model-Based DSS and Adaptive Decision Support

A model-based DSS focuses on modification and accessing of simulation model. A model following a particular implementation strategy facilitating decision making is developed. Users provide the data and factors to this type of DSS which assists decision makers in taking decisions. This type of DSS for e.g. can be used for the adaptive decision making of mergers and acquisitions.

Chiu, D.W, Lau, R.K., Liao, S.Y. & Wong, K.F. in their research have mentioned about the ABIMA model based on the business intelligence technology. ABIMA stands for Adaptive Business Intelligence for Mergers and Acquisitions. ABIMA is an environmental scanning model which performs finding the scanning needs, information collection and analysis, resulting communications; and decision making. This model supports strategic planning, target selection and valuation, integration post merging, legal matters, finance, transaction structuring and primary due diligence (Chiu, Lau, Liao & Wong, 2012).

A quantitative analysis is performed on the desired data by using web intelligence consequently improving the decision making process. A user starts by initiating a query, i.e. entering the name of the acquirer, entering target information is optional. User also needs to provide the time-window i.e. the historical data available through certain number of years. If user is unable to provide the time-window, then the system takes certain number of years as default and progresses ahead. This is done for calculating the due diligence. These queries can be captured from the intranet as well as other search engines and dedicated crawler programs which are then processed to get an output.

Sentiment analysis is also calculated which is nothing but a qualitative analysis of the data. This is performed by sentiment analyser which uses sentiment tokens. The purpose of

carrying out sentimental analysis is for managing the social, cultural, economic and political post-implementation issues.

A financial analyser is responsible for analysing the finance of the company and produce finance results. A target selection and valuation scoresheet is produced by this DSS using the business mining strategy for each company. The Business Intelligence technology helps in making corporate investment decisions. The suggestions provided by the DSS to the top-management are flexible as a DSS can change its suggestions according to the changing environment by analysing the environment change. In other words it can adapt easily to the smallest occurring business change and perform accordingly. This highly increases the chances of making a correct decision.

At the end, a due-diligence scoresheet, a sentiment analysis scoresheet ranking a single list of firms that are eligible for merger and acquisition, a target selection and valuation sheet are produced by the DSS which helps the decision makers to take decisions effectively and lead the organization to success.

Group Decision Support Systems

This DSS is used for developing communication between group members solving a decision making problem. Thus, this DSS falls in the category of communication-driven decision support system which allows multi-users to solve problems. The first type of GDSS is loosely coupled GDSS and the other one is tightly coupled GDSS.

In a decentralized loosely coupled DSS, a multi-layered relationship is established between the group via any network of an individual DSS. Individual decision support systems are linked together. But here, each and every individual interacts with the DSS on the behalf of group. This can be considered as an example for distributed problem solving.

The other desired type of GDSS is having a tightly coupled GDSS. Here, the two individual DSS interact with each other using the communication component of the GDSS framework. The Users, individual DSS and the network operating systems combine to form a GDSS. The communication protocols are developed for enhancing communications between the components. This enables data exchange between the desired decision support systems. The factors like network design and topology, error detection, data flow are also taken into account.

It is also important to know how much and what information has to be transferred exactly and its privacy. Input-output format flexibility needs to be incorporated. In GDSS, if some information exchanges are wanted by the participants to be public and some private (individual to individual), then for this purpose the established group norms are applied before starting the group decision making process. The communication patterns also are studied. Implementing this DSS involves implementing the seven layered OLAP model.

The Application layer monitors the information exchange between individual decision support systems with lot of flexibility. The decision maker is notified of the ongoing data transfers. A filter processes the user requests if the requests meet all the rules of a pre-defined

set and if it doesn't meet the requirements, then the user is notified of the violation. A decision maker can modify the communication protocols set by the norm constructor.

The presentation layer acts like a formatter. For, any information exchange taking place it verifies whether the document needs to be compressed or not and takes care of other such formatting procedures. The session layer maintains the state of the nodes between which communication is taking place.

The transport layer looks up to successful end-to-end delivery of messages considering all kinds of topology configurations. The network layer is responsible for correctly routing the information to the given destination routing address. This includes routing all the packets in correct order to the correct destination which means routing the whole message correctly in sequence. It is also responsible for switching. The priority and delay operations come under network's layer control.

Thus, basically the filter receives the protocols. These are then converted to dedicated group decision algorithms of the group monitor. These requests are transformed in to commands and these commands finally are executed by the network operating systems.

Web-Based Decision Support Systems

The DSS that provides assistance to top managers in decision making by using the client web browsers is called a web-based DSS. In the first phase of intelligence, the problem existing in an organization is identified and an individual user finds and gathers information from different internal and external sources. Internal sources may be classified as his personal contacts while external sources are any mass media like television, any experts of this field and other non-personal contacts. This can be called as the requirement gathering phase.

Now comes the next phase which is designing phase. In this phase, an effort is made to solve the existing problems. This is achieved by understanding and analysing the problems; and then accordingly a strategy is developed to solve these existing problems. This system is fast, efficient and easy to use; and hence is easily accepted by the decision makers. Thus, a WDSS is checked for compatibility, ease of usage and for also for reliability. There are research models that actually check a WDSS for these three features as these are the basic important features which a WDSS should possess so that there is no chance for a compatibility issue to arise.

From the set of alternatives produced in the designing phase, the decision maker now chooses one of the alternatives that he thinks will solve his problems at its best. Now, here the efficiency or productivity of WDSS is checked. The decision maker will accept any alternative as best only if he feels that it is reliable and valid. Thus, any user or decision making authority needs to trust the usefulness or productivity of WDSS. WDSS being a new concept, it is sometimes hard for the management to trust it. Thus, any user should get correctly acquainted with using WDSS which will make him trust the system and hence will help him enhance his decision making skills.

Knowledge Based Decision Support Systems

This DSS is basically used to solve problems concerning certain facts, procedures and rules. It helps identify problems and constantly takes the ability of a decision maker to a higher level, improving it more and more; and striving to make it more efficient specifically in an unstructured domain of information or unstructured environment.

The working of this DSS is as follows. The concerned strategic planners first of all develop a strategy after finding out the existing problems by understanding this DSS with the help of training sessions using different decision making tools. The files of this training session are then stored and can be reviewed as per the need.

The operation part involves the whole knowledge base being investigated or being inquired including each and every folder of the Knowledge Base for a proposed question describing the existing problem. Knowledge Base comprises of set of Boolean norms which are in an encoded form. The folder containing an answer to the proposed question is retrieved from the Knowledge Base but is considered as a valid solution only if it matches the context of the decision maker, not otherwise. This was the first method of solving problems using KDSS. The second method is as follows.

The second approach gives the decision making authority an option to investigate or search the folders that he wishes to according to his will. Each and every folder is not necessarily being scanned. This is more of an interactive approach wherein the DSS doesn't bring forth the recommended folders but gives the user a chance to select a folder of his choice for investigation. But again, this requires a user to have a complete and good knowledge of the Knowledge Base as only then it will be possible for him to choose the best folder from such a large Knowledge Base to make this approach successful.

This DSS can provide two types of output. The first type is as follows, the user is provided with the detailed response for each question that he has answered. The whole session is recorded and the list of all the investigated folders is also provided to the users along with the expert suggestions.

The second type of output is a summary being provided to the user depending on the questions that are answered followed by the expert recommendations by the DSS. A user can use the dictionary feature when he finds it difficult to answer the questions asked by the DSS. A user also can use the feature of justification sequence wherein he can determine the reason of a particular question being asked by the DSS to him.

The strategic planning process can also be used to determine where an organization stands in terms of its success or efficacy. Here, an effort is made to find out a large range of a domain wherein a strategy can be successful to a greater extent recognizing and further eliminating an unstructured domain; thus leading an organization to a good decision consequently increasing the scope of success.

These solutions are then compared with the expert opinions to again assure the correctness of a decision made. This DSS also identifies the crisis situation and tries to eliminate it by allocating certain required resources to it. A problem can be made dormant or inactive by this type of DSS again by assigning it with the certain required resources which in-turn reduces the chances of failure.

Organizational Decision Support Systems

The DSS which firstly assess the environment or nature of any organization and based on it helps make the concerned authority; a decision, is an ODSS. Every organization possesses a different atmosphere and hence decisions can be made supporting those specific environments using this kind of DSS.

There are different models that facilitate this type of decision making. The author in his study has explained four models; namely, the rational model, the political model, the program model and the garbage model. The most important out of all is the rational model. It finds out the nature of any organization, information use by each individual and program assessment with the help of certain predefined procedures. Thus, this model can effectively produce solutions to the organizational problems by studying as well as analysing the organizational behaviour (Sprague, 1981).

The political model produces solutions based on the strategies developed by the strategy development team which results in to the outcomes that are favourable to them. A decision is made by studying the capital and budget management as well the political processes that are being carried out in an organization. The garbage model proposes solutions to the problems arising due to the unstructured domain. The program model supports decision making process on the basis of scientific programs that are designed to make decisions. This model help visualize the impact of implementing programs and hence provides an insight on which program needs to be implemented as per the organizational behaviour (Sprague, 1981).

Self-evolving Decision Support Systems

This is a new concept that is being studied. A DSS can be called self-evolving if the DSS itself understands of how and in what it is being utilized, and hence adapts automatically to the existing organizational circumstances and evolving users on its own.

As explained by the authors in their research, it has the capability to provide a dynamic user interface and drop down menu hierarchy. This DSS contains a self-evolutionary mechanism that enables it to do so. This mechanism involves three components. They are as follows. The first component is the database of the users which displays the amount of system data used. The second component is having a Knowledge Base that contains set of procedures or rules and the third required component is a control mechanism that can control the evolution of the DSS (Jones & Ting-Peng, 1987).

It follows the evolutionary design implementation strategy which gives users the freedom to participate in the process of system development. It emphasizes the evolutionary nature of this approach removing the rigidity factor of the decision making process. Human involvement here is combined or integrated highly with the evolutionary DSS thereby providing flexibility in decision making. A user here is required to develop a DSS according

to his choice and preferences with the help of a designer provided by the DSS. The DSS then, whenever needed; adapts itself to the user requirements set by the user himself leading to a high user-friendliness. But for this, it is necessary for the user to possess the required technical skills and expertise (Jones & Ting-Peng, 1987).

Thus, it concludes that this DSS can be called as a self-evolving Data-Driven DSS as it possesses certain qualities of the Data-Driven DSS like user flexibility, dynamic system performing data retrieval and management according to the user's preferences. It also performs data filtering, provides drop down menus facility, allowing multiple users to use the system, automatically adapts to changes in the data; hence performs data manipulation, users can use data from different sources, meta-data production as well retrieval and the reports depicting the production results can be viewed.

Intelligent Decision Support Systems

According to the research carried out by the authors, this DSS uses the collaboration technologies. This includes again the integration of human excellence and an automated system for making a decision.

This DSS, according to the authors involves three components. The first component is the Database Management System (DBMS) which is responsible for storing internal as well as external data. The second component is the Model Base Management System (MBMS) which produces, stores and keep the models updated as well as maintained for efficient decision making. The third and the last component is the Knowledge Base Management Component. This component contains the intelligent DSS structure that provides the decision maker with the reasoning on choosing a particular decision. It provides explanations and expert recommendation to the decision makers on which can be a really effective decision out of the all. This can be achieved by using the artificial intelligence tools (Adla, Laskri & Soubie, 2007).

Conclusion

This paper concludes with providing an insight on how Decision Support Systems work and its applications. It concludes leaving the user with the knowledge and insight on which Decision Support System can be used in which kind of situation thus rendering a high level of effectiveness.

In today's competitive world, it has become very important for any organization to survive the competition and stay in league. An organization ultimately survives on the decisions it takes as it is the decisions that are implemented giving out the results and hence understanding as well as using the Decision Support Systems correctly to its maximum possible extent is of utmost importance when it comes to achieving success. Thus, this paper wraps up providing the user an insight and information on working and the applications of various Decision Support Systems.

References

Adla, A., Laskri, M., & Soubie, J.L.(2007).A Cooperative Framework for Intelligent Decision Support Systems. *International Review on Computers & Software*, 2(4), 292-301.

Chiu, D.W., Lau, R.K., Liao, S.Y., & Wong K.F.(2012). Web 2.0 Environmental Scanning and Adaptive Decision Support for Business Mergers and Acquisitions. *MIS Quarterly*, 36(4), 1239-A6.

George, J.F.(1991).The Conceptualization and Development of Organizational Decision Support Systems. *Journal of Management Information Systems*, 8(3), 109-125.

Goul, M., Shane, B., & Tonge F.M.(1986).Using a Knowledge Based Decision Support System in Strategic Planning Decisions: An Empirical Study. *Journal of Management Information Systems*, 2(4), 70-84.

Hsiang, L.W., Shin-Yuan, H.(2012).Factors Influencing User Acceptance of Web-Based Decision Support Systems. *Journal of Computer Information Systems*, 52(4), 70-77.

Huber, G.P.(1981).The Nature of Organizational Decision Making and the Design of Decision Support Systems. *MIS Quarterly*, 5(2), 1-10.

Jones, C.V., & Ting-Peng, L.(1987).Design of a Self-evolving Decision Support System. *Journal of Management Information Systems*, 4(1), 59-82.

Matthias, J. & Tung, B.(1986).Communication Requirements for Group Decision Support Systems. *Journal of Management Information Systems*, 2(4), 8-20.

Phillips-Wren, G.(2012).AI Tools in Decision Support Systems: A REVIEW. *International Journal on Artificial Intelligence Tools*, 21(2), 1240005-1-1240005-13

Power, D.J.(2008).Understanding Data-Driven Decision Support Systems. *Information Systems Management*, 25(2), 149-154.

Service Economics – A Brief Look at a New Subject

Harry Katzan, Jr.

Webster University

ABSTRACT

Most commercial, educational, governmental, and social activities in modern society involve service. The work of professionals in areas such as medicine, law, and education is prototypically service, and the primary participant is actually a service provider, because service is core to their usual work. Business, governmental, and educational enterprises essentially provide service, as do most products and social activities. In fact, approximately 90% of the GNP in developed countries is derived from service. Service is also a major component of many academic disciplines such as marketing, management, economics, and of course accounting and information systems. This paper provides a brief look at the new subject of service economics and takes the view that service is the main driving force behind modern society, building on the groundbreaking work of Adams, Mill, Jevons, and Fawcett. It explores how the knowledge of service principles can serve as the operational basis of a complex civilization.

INTRODUCTION

A *service* is generally regarded as collaboration between a provider and a client that creates and captures value for both parties. Both the provider and the client contribute in the interchange and both benefit, even though the form of participation is diverse and varies between different forms of service execution. [Katzan 2008] A prototypical example is the relationship between a doctor and patient that relies on the participation of both persons, since both entities are required in order for the service to be instantiated. Moreover, a doctor's service varies between patients and yields different results, depending on the situation. This characteristic is customary with most service. The entity supplying the service is known as the *service provider* and the entity receiving the service is known as the *service client*. The domain of service providers includes individuals, teams, products, electronic systems, groups, and ad hoc units organized to execute a particular service delivery situation. Similarly, service clients include persons, groups, social organizations, governments, and commercial entities. In some cases, the object receiving the service is the responsibility of the client, as in child-care and maintenance work. In this instance, the object receiving the service is known as the *service*

object. A service is often complicated requiring supplementary and subsidiary services, so that a complex chain of services, called a *service system* is necessary to achieve a particular result. The underlying reasons for typical services fall into the following modalities: *tell me, show me, help me, and do it for me.* [Maglio 2007] Thus the term “service system” is representative of a wide range of activities and artifacts, such as a missile system, an educational system, or a medical system. Many commercial activities, such as airline transportation are based solely on service, and in other cases, service is only a part of a complicated commercial arrangement, as in vehicle retailing. Many business firms specialize in providing service. Service design is a field of study in art and design curricula. Governmental and educational work is a service, and religious groups provide a service. Military personnel are designated as being in the service. The manufacturing process uses services to assemble products that effectively supply a service. The ubiquitous use of the term “service” in everyday communication is so pervasive that the significance of the concept is diluted through overuse. Even though most social, commercial, educational, and governmental activities are actually service, most people like to submit to their own intuition when designing and providing service without knowledge of basic service concepts. They are often surprised when results do not turn out as expected. Actually, a complete knowledge of the interaction of the various and diverse forms of service, together with its developmental hierarchies, would require a lifetime of study. [Ferrario 2008, Jevons 1880]

Derivation of Service Needs

Services are derived from societal needs, such as medical care, fire and personal safety, and educational assistance. So, how do services in the proverbial sense differ from products that are purportedly also derived from people’s needs? A service is derived from a specific need and is created at the point of instantiation, that is, when the service experience actually occurs. A product is created, on the other hand, from an anticipated need and is created independently of the specific entities that will eventually use it. Accepting the fact that some products are constructed as special orders, the majority of products are manufactured beforehand and held until purchase. That said, products are in fact services, because the use of a product provides a service to the user. A vehicle that entails transportation provides a service. A famous painting, displayed in a suitable place, also provides a service to the owner, although its value is totally different, and ordinarily supplies an intangible benefit.

Varieties of Service

A *tangible service* is a provider/client event that results in demonstrable value to the service participants. In people or possession processing service, value is created through the work performed on behalf of the client by the provider. With information services, the value of the service is derived

from the transfer of information from the provider entity to the client entity. The value proposition for a product is determined from the service it provides, rather than from the intrinsic value of its specific components. A tangible service is something that is observable in the real world and delivers results that are utilitarian and measurable.

An *intangible service* provides an affective value for a service participant through the feeling one obtains from a service interaction or the ownership of a product. Certain products, such as premium automobiles, special jewelry, and elegant real estate are typically associated with this category. The results from intangible service are affective and hedonistic. Often, the education or affiliation of a service provider supplies intangible value over and above tangible value. Many forms of service incorporate both tangible and intangible components. [Katzan 2009, Katzan 2008]

Basic Service Science

Service is the prevalent activity of persons and organizations, and yet, very little is known about the subject. There are no theories, best practices, and no principles of precisely what constitutes good service. From a business viewpoint, service sustainability has not even been considered in most instances. People are interested in service, and its academic foundation is known as *service science*. It will eventually change the predominant economic focus in developed countries from products to service. The subject is important to providers and consumers of service, since most service providers, such as individuals, businesses, governments, and other organizations, are also consumers of service.

The notion of service is straightforward and a conceptual view of the subject matter is easily acquired. *Service is work performed by one person or group that benefits another person or group*. Clearly, the provider and client have differing roles and they need to exchange information to execute the service event. If one were to consider the interactive component of basic service, it would be considered to be a social activity that is consumed at the point of production. The service provider and the service client co-produce a service. Thus, service is a process, usually referred to as a service event, characterized by customer participation, simultaneity, perishability, and heterogeneity. *Customer participation* refers to the fact that the customer brings an asset to the event and that is the domain within the event takes place. *Simultaneity* refers to the unique instance where the service is produced and consumed at the same time. *Perishability* denotes that if the opportunity to engage in the service event by the provider or client is not taken, then the opportunity is lost. Lastly, *heterogeneity* specifies that each service event is unique. [Katzan 2008] A service event cannot be repeated. If it is performed an additional time, it becomes another service.

In the case of *business*, the nature of service is the same, as in the elementary form, but the scope is often greater and requires organizational as well as functionary skills. When a business process is given to an outside party, the activity is called *outsourcing*, which can occur at the local or global level. Some firms are in the business of providing services on a broad scale and the various processes are normally governed by an explicit or implicit service-level agreement.

Service Process and Organization

Service can be viewed from a global level or a local level. At the global level, an organizational entity that provides a service normally goes through a service lifecycle consisting of service commitment, service production, service availability, service delivery, service analysis, and service termination. As such, the service organization can be characterized, as being composed of a layered set of activities that constitute a value chain for services, comprised of people, technology, and organizations. This is essentially a process view of generic services supplied by a governmental or economic entity, such as a governing body, a business, an institution, or an individual acting in a service capacity. *Service commitment* refers to the formal agreement that provides a class of services to a service audience by a principal or trustee with proper administrative control over the service domain. The agreement, such as a charter, to provide fire service by a municipality and the establishment of a health clinic are common examples. The mayor of a city is a common example of a service principal. *Service production* pertains to the operational aspects of service provisioning that encompass service design, infrastructure, availability, quality management, and back-office processing. The producer is the agent of the principal in a prototypical principal-agent scenario. The principal and the agent may be the same economic entity or different entities in a distinct service relationship. The producer is responsible for insuring the resources are available to execute a service, including those persons charged with actually performing that service. *Service availability* denotes the time when a service is available, including initiation and termination dates and times. *Service delivery* is the comprehensive class of activities usually regarded as the “service” and is the layer where the service provider and client come into the picture. The doctor/patient relationship is a good example of this layer. The service provider, who could have a dual role as a producer, is an agent of the producer as the primary source of service revenue and is the primary provider of service. Service delivery normally consists of several inherent services constituting a service value chain. *Service analysis* refers to the measurement activities and the determination of value propositions needed to sustain service operations. *Service termination* reflects the inevitable consequence of evolving services where a total service operation has to be retired, because of insufficient activity or realigned opportunities. [Katzan 2009]

BASIC CONSIDERATIONS FOR SERVICE ECONOMICS

In the traditional world of economics, the efficiency of labor, production processes, marketing, and sales is paramount to a successful and sustainable enterprise. The concepts apply as well to non-profit organizations as they do to profit-making business, and equally well to education and government. Everything else being equal, an inefficient worker can extend the length of employment or provide an opportunity for additional workers. The implication is that capital, needed to sustain economic activity, is unlimited. With automation, of course, the significance of capital changes. Fewer positions are needed, and the character of the workplace is improved. Thus, the employers and employees benefit. In service, the interactions are more complicated in that the initial success of a particular service, within a specific domain, engenders an increased demand that leads to additional service provisioning and also a larger client population. Increased service demand should result in decreased client costs.

Service Economy and Service Economics

Service economy and economics are related terms concerned with the value proposition of a service and how it is provisioned and consumed. *Service economy* is the study of the nature of services that underpin the activities of persons, organizational entities, institutions, governments, and nations. It is based on derived value that enables one entity to be more successful as a service provider than another. *Service economics* is the study of the interactions of service entities that essentially constitute a service experience. Service economy operates at the general level, and service economics operates at the detailed level.

A service economy is concerned with how a service is formulated through a life cycle of commitment, production, availability, delivery, analysis, and termination. Most services adhere to this life cycle. The service interaction in service economics incorporates activities, primarily based on the client, that include service acquisition, invocation, execution, and service termination. These topics will be expanded upon in subsequent pages.

Learning and Applying Service Concepts

It is important to recognize that service is a science, as is chemistry or biology, in the sense that knowledge of the subject matter increases the ability to provide and consume service. [Jevons *op cit.*] There is published information supporting the subject of service science together with characteristic problems and a wealth of appropriate solutions. People, in general, do not become familiar with a

subject until the underlying principles have been exposed. The nature of service should be considered when any political, financial, or business question arises.

There is a body of knowledge, however, that supports the conjecture that a set of principles governs the operation of services, and that the information contained therein has a basis in modern Philosophy. In social *constructivism*, individuals and groups participate in a perceived reality, and create an element of knowledge, as espoused by the philosophical doctrine of Equal Validity. [Boghossian 2006] Equal Validity suggests the notion that other means of knowing exists in addition to the factual predominance of scientific investigation. As an example of constructivism, consider a simple wooden chair developed in antiquity. A chair is often made from wood that has been determined as useful to the purpose. Clearly, wood exists as a natural phenomenon, independently of its various uses. The precise form and substance of a chair, however, is a socially constructed form of knowledge that none but the hardened skeptic would deny is a valid form of knowledge. So it is with service. Service systems are socially constructed forms of interaction wherein entities exchange beneficial forms of action through the combination of people and technologies that adapt to the changing level of information in the system. Thus, service is a social reality constructed through a dynamic process replicated and maintained by social interactions within a service and between services.

Service economics, and by extension service provisioning and service utilization, is different than other sciences used to make the lives of individuals more healthy and prosperous. For organizations, it might be a matter of success or failure. Service economics deals with the value derived from services, how that value is derived, and how it can be enhanced by modern technology. Certainly, wealth derived from service provisioning is an important consideration in the availability of service, but there are other non-monetary benefits to be derived from service, such as success, happiness, opportunity, and possibly mere existence.

Structural Dynamics of Service

Most services adapt a common structure that essentially determines how the provider and client interact in order to execute a service process. Ordinarily, the total service process incorporates several well-known steps that constitute what is commonly regarded as the service: service acquisition, service invocation, service execution, and service termination. More will be said later about this service process lifecycle. Clearly, this is a provider view of service. The prevailing opinion is that the client is involved as a secondary participant. However, what would occur if there were no clients? Without clients, a doctor is simply a person with a medical degree, and a bricklayer is someone that knows how to position bricks or similar objects. A client provides a service to the provider by engaging in the service process as being a receiver of service. The basic idea is that there is a certain duality in services, wherein the client depends on the provider and the provider depends

on the client. We will refer to this phenomenon as *service duality*. Thus, the common practice of denoting the client as a secondary participant is not valid in the modern view of service execution. The provider and the client, in the most general sense regarding service, are on an equal footing.

In many instances, the provider and client are not singular but are groups. A group of service providers, known as a *provider set*, is a collection of service systems designed to support a particular endeavor in its respective domain, such as a university, medical group, or even a newspaper. Each element in the set provides a specific service to a client. Associated with the provider set is a *client set* composed of elements that functions in a complementary manner with provider set elements to instantiate a service event. A service is thereby an interaction between an element from the provider set and an element from the client set, represented as a mapping between the sets. Accordingly, the collection of mappings is known as a *service set*. It follows that a *service collective* is a 3-tuple consisting of a provider set, a client set, and a service set, all of which can interact through an eclectic platform designed to sustain a unified service system. A unified service system is created when a client set is combined with the provider and service sets, and the inherent process is called *unification*.

Examples of service collectives are commonplace. A university, for example, provides services to students. The provider set would consist of administrative, student, and academic services. The students comprise the client set. Similarly, a newspaper consists of sections, such as sports news, national news, international news, financial news, and so forth. Readers are the clients. In both instances, not all clients require the use all of the services, and a section of providers do not supply all of the services.

A *service value chain* is a progression of activities adopted to materialize a service. Not all service resources perform functions that are specifically evident in a provider/client interaction. In fact, there are three major stages in a service value chain: service commitment, service production, and service delivery. The three stages are collectively referred to as service provisioning. When practitioners refer to service, they normally intend the service delivery stage.

In many cases, the provider set operates as a connected service system that interacts through shared information to provide a service. Two forms are clearly distinguished: flow and interactive. In a *flow system*, information is passed between service providers in a sequential basis. Operationally adjacent providers are coupled to provide service delivery, where coupling reflects dependency, as opposed to cohesion that reflects stickiness. Essentially, one provider performs the initial step in a service process; a second provider performs a second step, and so forth. In an *interactive system*, members of a collection of providers interact on a needs basis to execute a service. Thus, the provider set can be viewed as a partitioned set in which sections demonstrate coupling or cohesion.

Collaboration

In the classic view of service, the roles of the provider and client are not symmetrical. In the most general sense, and even though the provider supplies a service to the client, and the client provides a service to the provider by being a client, the roles each entity plays is markedly different. In actuality, a team of providers may supply the service, and the client may be a singleton. For example, a team of doctors may service a single patient. The converse is also true, in the sense that is mayor provides leadership to an entire town. As mentioned earlier, the client provides a reciprocal service to the provider. This is an example of *service duality*. Clearly, the question is “Does the mayor provide service to the town or does the town provide service to the mayor?” It is conceivable that service duality is a form of exchangeable value in service. [Katzan 2010]

In some instances, a set of service providers collaborates to execute a service. A *primary service* is the core service for which the provider and the client interact to produce demonstrable value. Accordingly, the key person, in a human instance, is the *primary service provider*, and in all but exceedingly simple cases, that person has helpers that provide secondary services. A *secondary service* is a service that ordinarily does not exist separately as a primary service and plays a supportive role to a core service. A doctor that supports a surgeon is functioning as a *secondary service provider*. *It is important to note at this point that the name “secondary service provider” does not imply capability, but what is actually performed during the execution of a service process.* The notion of a secondary service traditionally encompasses separate functions involved in the performance the core service process, existing in close physical and temporal proximity. A core service is dependent upon a secondary service, and the reverse is also true. The cohesion between core and secondary service processes is high. (See below.) When this phenomenon occurs, the core and secondary service providers are regarded as collaborating in the service process. Examples of secondary services are numerous and have a substantial variation. Three instances are the weigh in and blood pressure checks associated with a doctor’s visit, the acceptance and delivery of garments at a dry cleaning establishment, and the routine support functions performed in support of an automobile mechanic.

When two service providers are cooperating to perform a task, or set of tasks, but working independently as with a couple of masons building a structure, the concept of core and secondary service processes does not necessarily apply, since the cohesion of the two participants is low.

There are two additional forms of supporting service: facilitating service and auxiliary service. A *facilitating service* is disjoint from a primary or secondary service and enables a client to obtain utility from a service, such as instruction on how to use an automobile or a computer. Another

example is a ticket agency that provides access to a tangible event, such as the theatre or an amusement park. An *auxiliary service* is independent from a core service and takes place before or after the core service. A referral event, for example, would be an auxiliary service.

Service Process Lifecycle

It is useful to identify the key events in the operational service, because this is how value is created. The *service lifecycle* can be viewed as those activities that exist between service acquisition and service termination – from both structural and operational viewpoints. From the *structural* point-of-view, the set of layered activities incorporate the service commitment, service infrastructure, service availability, service delivery, and the eventual termination of a service, as delineated previously. From an *operational* point-of-view, the layered activities describe service events and incorporate those transactable actions that constitute the essence of service.

Based on the above definitions, the lifecycle of a service process consists of a loosely defined set of steps intended to co-create value for complementary service participants. It is useful to conceptualize a generic lifecycle for domain ontology as consisting of the following steps: Service acquisition, Service invocation, Service execution, and Service termination. *Service acquisition* refers to the process of identifying a service provider with the requisite infrastructure, and its corollary, the process of attracting clients. *Service invocation* involves the scheduling and logistics part of the service process. *Service execution* entails the actual steps in the service process including supplementary services. *Service termination* incorporates referral, warranty, and archiving activities. The requisite infrastructure for sustaining the service process lifecycle is referred to as the *service platform* and is related to the activities of the producer in the upper ontology, covered previously. The service process lifecycle can be viewed as a set of layered events. One would ordinarily supplement the service process lifecycle with service analytics that are descriptive of the end state of a service event.

FUNDAMENTALS OF SERVICE ECONOMICS

Service economics is a subject that studies the nature of wealth generated by service. [Fawcett 1870] It is an important subject because the modern view of the service economy must be considered when any political, financial, or business question arises. People do not generally become familiar with a topic until its underlying principles have been identified. Service is largely a utilitarian discipline

[Mill 1861], wherein a coherent set of underlying principles are not yet available, so that in everyday affairs, it is not prudent to defer analyzing the subject until those principles have been verified or confirmed. Every social question involves service, so that service economics would necessarily involve the following endeavors: production, exchange, distribution, and commerce. Another consideration is that the focus of economics has changed from land, labor, and capital to participants, knowledge, and capital. Capital is an important component, but not a defining characteristic, and necessarily encompasses wages and infrastructure.

Wealth and Service Value

Wealth is an important aspect of the end result of any commercial activity. Like service, wealth is a term with a many different meanings. In business, wealth refers to money and things that have exchangeable value. In government, wealth refers to the capability of having commercial and political power using money as a facilitator. In education, wealth is usually reflected in facilities and instruction. A wealthy country would have more exports than imports resulting in an importation of money, using the precise form of money available at the time. Mill [1885] wrote that the wealth of a country is dependent on the skill that its labor is employed, and Smith [1776] remarked that labor is the basis of all production. *This leads, of course, to the modern reflection that an increase of wealth is not only an increase in money, but it is the potential for providing service.* Early political economists considered wealth as anything with exchange value. [Fawcett op cit.] However, many things with useful purpose, such as the air and sunlight, are not wealth unless modified by human intervention. Money, as a public instrument, is solely a measure of value and a medium of exchange. A wealthy person or organization has a large collection of desirable or necessary items, or the means of obtaining them, provided that they are not provided by nature without some form of labor. Another consideration is that wealth is increased by producing where and by whom it is produced most expeditiously. [Ricardo 1817]

Although service can and does involve products, it is not a material product of nature, so that service wealth, in its most basic form, is useful activity that produces value through human involvement. Service wealth lies in the potential for providing service, so that service-provisioning agents are the basis of all service. Clearly, humans, products, and informational resources can provide service. Thus, *value is established by an exchange of service through a provider-client relationship.* Service is usually associated with business, where value is produced through the manipulation of goods, capital, people, and events. Thus, service is a refinement of the business process.

A vertical is used to establish the value of service, consisting of value, price, and cost. The difference between cost and price yields the margin, and the difference between price and willingness to pay is the service value.

There is no explicit exchangeable value in service, per se, because you can't purchase someone else's service. A service is established at the point of instantiation and ends when the service is complete. The particular service under consideration is then finished. It no longer exists – only a record (or memory) of that service persists, along with tangible or intangible results, as determined by the specific incident. Separate from the actual service process, the facility of obtaining service, in the general view of society, can be scheduled, rescheduled, unscheduled, transferred, and purchased. The access to service is transferable, but the actual performance of service is not. Moreover, it is possible to purchase the ability to obtain a service, and it is possible to pay for actually receiving a service by the client or a client's advocate.

A clarification is in order. One might view the purchase of an airline seat or of an automobile, as a product that can provide a service, as something of exchangeable value. The purchase of a seat or an automobile is an entity capable of providing or sustaining a service is a *service facilitator*, but it is not a service per se. A *service* is the execution, or more properly the instantiation, of a process that provides the service, as in the airline or automobile form of transportation.

On the other hand, there must be some explicit value in service, since it serves as the basis of the modern economic system. Thus, the wealth inherent in service results from the co-creation of value. The execution of a service yields two or more distinct values: the *act* of performing or receiving the service and the *result* of having the service process performed. Accordingly, a service value can have two related components: *commercial value* and *personal value*. The result may be tangible or intangible, as covered previously. During the act of performing a service, it is useful to recognize two things: the provisioning dimension and the “receiving” dimension, to which we can add the service object dimension that may coincide with the receiving dimension.

When a service provider executes a service, including auxiliary and supplementary services, it is done for an economic value – salary, a fee, or another form of compensation. When a service client receives a service, it is often the case that a personal value is obtained – a state that is inconvenient or impossible to achieve independently.

The reasons are clearly evident, since most services result from one or more of the following circumstances: (1) Something you can't do; (2) Something you don't want to do; and (3) The opportunity cost of the client performing the service. There are, of course, two points of view: that of the element of the provider set and the element of the client set. From the perspective of the provider, the service value lies in the performance of the service process, and from the client's perspective, the service value results from the end state after the service is performed.

The Domain of Service

It is clearly obvious that the work of a professional entity is a service. Retailing is a service by changing the ownership property of an item within its domain. Employees of an organization provide a service, as does the mayor of a city or governor of a state. Federal, state, and local governments provide a service to their constituents. Police and fire departments provide a service. The religious clergy provides a service. Educators and parents provide a service. Products provide tangible and intangible services. Most forms of commercial and social activity involve service of some sort. Yet, we, as a society, actually know very little about service; we can elicit no principles of good service behavior, and very little evidence of best practices – in spite of the fact that at least 80% of persons are engaged in service – through commercial or social activity.

Service Structuralism

The thesis of *service structuralism* concerns the concept that what really matters about service is not the concrete elements of provider, client, and object, but rather the manner in which the elements relate to each other. Thus, a service system is a collection of abstract objects with relations on how the objects interact to each other, so that a structure is an abstract form of a system. [Hilbert 1899] Only when concrete objects are abstracted from the service system can principles of behavior be developed.

A property is an attribute or characteristic of a service element. There are two forms of study: *conceptualism* and *realism*. In the former case, properties exist but are dependent upon the mind. In the latter case, properties exist independently of the mind. We are concerned with realism for the development of principles that govern service. Again, there are two forms. With *in rebus* realism, a property exists only if it has instances. With *ante rem* realism, a property can exist if it has no instances. [Audi 1999] This paper takes the ante rem view of service economics. To sum up, what we are concerned with in service economics is not the characteristics of the provider, client, and service event, but the relationship between the various constituent elements.

Service Requisites

Service economy is a discipline that investigates the operational conventions that govern the production, exchange, and distribution of value resulting from the execution of service process, service event, or use of a service artifact. Value is a demonstrable result of the application of the operational conventions.

The value of a service essentially incorporates three entities: the service provider, the service customer, and the service object. The important element, as least at this point, is the junction where the three entities interact. Recall that the customer is typically more concerned with the result than the service process. The service provider is more concerned with the service process, because if the service is performed correctly, then the result will be satisfactory. The service object is independent of the service process, unless it coincides with the customer.

The basis of classical economics stems from the writings of Smith [op cit.] and Mill [op cit.] and is recorded in the publication of Fawcett [op cit.], and is synthesized from the coordination of land, labor, and capital, serving as the input to production. Within a background of classical economics, the tenets of service provisioning are specialization, division of labor, and comparative advantage. A client arranges for service with a specific provider to obtain the knowledge and experience in a particular domain. The service process is designed to utilize the notion of service itself – the division of labor – to enhance efficiency and achieve quality of the service experience. Comparative advantage results from the practice of employing a service provider with the most prudent infrastructure to achieve the highest quality results from the service process.

The basic tenets of service model those of classical production that have stood the test of time. *Specialization* allows the service producer to take advantage of existing abilities. [Fawcett op cit.] *Division of labor* allows specialization to be applied where it is most applicable, and *comparative advantage* permits outsourcing to be employed to provide service efficacy. The three basic tenets expedite large-scale provisioning, yielding a better quality of service and efficient operations.

Focus of Service Economics

The view of service economics was described earlier as being focused on the participants, knowledge, and capital. The *participants* in a generic view of service are the provider and the client sets that result in the notions of collaboration and duality. Technological, organizational, and human elements are traditionally combined to create service.

Knowledge, as in the case of professional endeavors, and *capabilities*, as in the case of manual procedures, are paramount to service. Knowledge and capability supersede specialization, provide the basis for division of labor, and often constitute the requirement for outsourcing.

SOBIE 2014

Capital takes on its traditional value, as the part of wealth that is advanced to establish infrastructure, stock, and supplies and to cover wages until service renders a return on investment. Owners of capital will ordinarily appropriate funds unless they are rewarded with a share of the value generated by service – referred to as the *profits of capital*. It has three components: interest on the money expended, compensation for risk, and the variability of the service domain. If the profits derived from the capital investment were not greater than the interest on the funds, for example, then clearly the investment would not be made – unless special exogenous considerations apply.

Participants, knowledge, and capital are the basis of and the forerunners of further work on service economics.

SUMMARY

It is generally recognized that *service* is a provider/client collaboration that creates and captures value for both participants. Both entities contribute in the interchange and both benefit, even though the sense of participation is diverse and varies between different forms of service execution. An example is the relationship between a doctor and patient that relies on the participation of both persons, since both entities are required in order for the service to be instantiated. Moreover, a doctor's service varies between patients and yields different results, depending on the situation. This characteristic is typical of most service. The entity supplying the service is known as the *service provider* and the entity receiving the service is known as the *service client*. The domain of service providers includes individuals, teams, products, electronic systems, groups, and ad hoc units organized to execute a particular service delivery scenario. Similarly, service clients include persons, groups, social organizations, governments, and commercial entities. In some cases, the object receiving the service is the responsibility of the client, as in cleaning and repair services. In this instance, the entity receiving the service is known as the *service object*.

Most commercial and social activity involves service, yet very little is known about the subject. This paper covers the structure and operation of services, as well as a lifecycle of service processes. The relationship between service and traditional economics is explored as a basis for the study of service economics.

REFERENCES

Audi, R. (General Editor), *The Cambridge Dictionary of Philosophy* (2e), Cambridge, UK: Cambridge University Press, 1999.

Boghossian, P., *Fear of Knowledge: Against Relativism and Constructivism*, Oxford: Oxford University Press, 2006.

Fawcett, M., *Political Economy for Beginners*, New York: Barnes and Noble, Inc., 2004, (Originally published in 1870.)

Ferrario, R. and N. Guardino, "Towards an Ontological Foundation for Services Science," *Proceedings of the Future Internet Symposium*, Vienna, Austria, 28-30 September 2008.

Hilbert, D., *Grundlagen der Geometrie*, Leipzig: Teubner, 1899. (Townsend, E. (Translator), *Foundations of Geometry*, La Salle, Illinois: Open Court, 1959.)

Jevons, W., *Political Economy*, New York: D. Appleton and Company, 1880.

Katzan, H., "Principles of Service Systems: An Ontological Approach," *Journal of Service Science*, 2(2): 35-52, 2009.

Katzan, H., "Service Collectivism, Collaboration, and Duality Theory," *IABR Business Conference*, Orlando: The Clute Institute for Business Research, 2010.

Katzan, H., *Service Science: Concepts, Technology, Management*, New York: iUniverse, Inc., 2008.

Maglio, P., "An Interdisciplinary Approach to Service Innovation," *IBM Almaden Research Center*, <http://almaden.ibm.com/ssme>, 2007.

Mill, J.S., *Principles of Political Economy*, New York: D. Appleton and Company, 1885.

Mill, J.S., *Utilitarianism*, New York: Barnes and Noble, Inc., 2005, (Originally published in 1861.)

Ricardo, D., *The Principles of Political Economy and Taxation*, New York: Barnes and Noble, Inc., 2005, (Originally published in 1817.)

Smith, A., *The Wealth of Nations*, New York: Barnes and Noble, Inc., 2004, (Originally published as "An Inquiry into the Nature and Causes of the Wealth of Nations" in London England, 1776.

ABET Accreditation of IS and IT Programs In 2013

Ron MacKinnon, Georgia Southern University
Kevin Elder, Georgia College & State University
John Dyer, Georgia Southern University

Abstract

The Accreditation Board for Engineering and Technology (ABET) has been accrediting engineering and computer science for many years and they are the standard accreditation in these areas. . In recent years ABET has been accrediting Information Systems and Information Technology programs. ABET first accredited IS in 2000 and IT in 2003. ABET appears to have become the standard accreditation for IT and in the spring of 2014 there are 25 IT programs accredited by ABET. There are 38 IS programs accredited by ABET since 2000 but it does not appear that ABET accreditation has become the standard for IS programs. This paper looks at the IS and IT ABET accredited programs and examines the common features and differences of these related accredited programs.

Background

The topic of ABET accreditation of IS programs has been a topic of interest since 2000, as can be seen by the papers written on this topic, as shown in the references. There were many papers written on ABET accreditation of IS programs in 2000-2005 but the number of papers slowed down after 2010. This paper will give an update to the accreditation of IS and IT programs by ABET up to 2013 and will show the characteristics of ABET accredited IS and IT programs. The information in the following tables was acquired by visiting the web sites of the various universities. These pages are continually updated so the data that will be available in the future might not match the data used for this paper.

ABET Accreditation of IS Programs.

The ABET accreditation of IS programs started in 2000 and for 10 years there was a steady growth of accredited IS programs. However in the past 4 years there have only been 3 IS programs accredited, as can be seen in Table 1. At one time it appeared that ABET accreditation of IS programs might become the standard IS accreditation like ABET is the standard accreditation for engineering and computer science. However, at this time it does not appear that ABET will be the standard accreditation for IS programs.

SOBIE 2014

Year Program Was Accredited	No of IS Programs Accredited	Year Program Was Accredited	No of IS Programs Accredited
2000	1	2007	2
2001	6	2008	3
2002	3	2009	3
2003	3	2010	1
2004	4	2011	2
2005	3	2012	0
2006	4	2013	0
		Total 2000-2013	38

Table 1 The Number of IS Programs Accredited by Year

ABET Accreditation of IT Programs.

In Table 2 below, it can be seen that ABET accreditation of IT programs began in 2000 and there has been a steady growth of IT programs accredited by ABET, although this growth slowed down in 2012 and 2013. . In Table 4 it can be seen that most IT programs are not in Colleges of Business, so IT programs do not have many options as to who will accredit them. It is possible that over time, ABET will become the standard accreditation for IT programs.

Year Program Was Accredited	No of IT Programs Accredited	Year Program Was Accredited	No of IT Programs Accredited
2003	3	2009	2
2004	1	2010	3
2005	3	2011	2
2006	2	2012	0
2007	5	2013	1
2008	2		
		Total 2003-2013	25

Table 2 The Number of IT Programs Accredited by Year

Characteristics of ABEP Accredited IS Programs

The vast majority of IS programs are in colleges of business and they are often accredited by AACSB. In Table 3, there are several characteristics of ABET accredited IS programs that stand out. Most IS programs in colleges of business offer a BBS IS degree. In Table 3 it can be seen that of the 38 ABET accredited IS programs, 35 of them offer BS degrees. Another characteristic that stands out is that most of the ABET accredited IS programs are not offered in Colleges of Business.

In addition to offering a BS degree and not being located in a college of business, ABET accredited IS programs are often located in more technical oriented colleges. As can be seen

SOBIE 2014

in Table 5, universities offering ABET accredited programs also often offer computer science and engineering programs and they do not offer a BBA IS degree.

Characteristics of ABET Accredited IT Programs.

In Table 4 below, it can be seen that IT programs have several differences from IS programs. IT programs offer BS degrees and do not offer BBA degrees. IT programs are often offered in joint departments of IT or computer science departments and are located in colleges that are technically oriented and these colleges are not usually business oriented.

#	University	ABET Acred Year	Department	IS Title	Deg	College
1	Arkansas Tech	2006	C & Info Science	IS	BS	Applied Science
2	California SU, Chico	2008	Acct & MIS	MIS	BS	Business
3	California U of Penn	2008	Math, CS & IS	CIS	BS	Science & Tech
4	Drexel U	2001	None	IS	BS	IS & Technology
5	East Tennessee SU	2010	Computing	IS	BS	Coll of Bus & Tech
6	Fitchburg State College	2006	Computer Science	CIS	BS	None
7	Florida Memorial U	2008	CS & Math	CIS	BS	School of Arts & Science
8	Gannon	2004	Computer & Info Sciences	MIS	BS	Hum, Bus & Education
9	Grand Valley SU	2007	School of Comp & IS	IS	BA	Engineering & Comp
10	Illinois State U	2001	School of IT	MIS	BiS	School of IT
11	Jacksonville SU	2003	Math, Computing & IS	CIS	BS	Arts & Science
12	James Madison	2003	CIS & Mgmt Sci	CIS	BS	Business
13	Kennesaw State U	2002	CS & IS	IS	BS	Science & Math
14	Metropolitan S College	2005	CIS	MIS	BS	School of Business
15	NJ Institute of Tech	2002	IS	IS	BS	Computing Sciences
16	Pace U	2000	None	IS	BS	School of CS & IS
17	Quinnipiac U	2005	Info Sys Mgmt	ISM	BS	School of Business
18	Radford U	2008	Info Tech	IS	BS	Science & Technology
19	Regis U	2010	None	CIS	BS	School of C & IS
20	Robert Morris U	2001	CIS	ISM	BS	School of Comm & IS
21	Rowan U	2006	None	MIS	BS	Business
22	Slippery Rock	2003	Computer Science	IS	BS	Bus, Info & Social Sci
23	Southern Utah U	2009	CSIS, Sch Comp & Tech	IS	BS	Science & Engineering
24	SUNY Brockport	2011	CIS	CIS	BS	Sch of Bus Admin & Econ
25	U of Tampa	2009	Info & Tech Mgmt	MIS	BS	Business
26	U Arkansas, Little Rock	2006	Info Sc	IS	BS	Engineering & IT
27	U Houston, C of Tech	2009	Info & Logistics Technology	CIS	BS	Technology
28	U Houston-Clear Lake	2004	Comp & Math Division	CIS	BS	Sch of Science & Engin
29	U Nebraska, Omaha	2002	IS & Quant	MIS	BS	IS & Technology
30	U North Alabama	2006	CS & IS	CIS	BBA	Business
31	U North Florida	2001	C & IS Sciences	IS	BS	School of Computing
32	U of South Alabama	2001	C & IS	IS	BS	School of Computer & IS
33	U South Carolina	2004	Computer Sci &	BIS	BS	Engin & Computing

SOBIE 2014

			Engineering			
34	Utah S U	2005	Computer Science	CS	BS	Science
35	Utah Valley U	2007	IS & Tech	IS	BS	Technology & Computing
36	Virginia Commonwealth	2001	IS	IS	BS	<i>School of Business</i>
37	West Texas A&M U	2011	CI & DM	CIS	BBA	<i>College of Business</i>
38	Wright SU	2004	IS & Oper Mgmt	MIS	BS	<i>College of Business</i>

Table 3. ABET Accredited IS Programs in 2013

#	University	ABET Accredited Year	Department	IT Title	Degree	College
1	Brigham Young U	2004	IT	IT	BS	School of Tech
2	Capella U	2009	Bus & Tech	IT	BS IT	School of UG Studies
3	Drexel	2007	IT	IT	BS IT	Col of Com & Info
4	East Tennessee	2005	Computing	IT	BS	Col of Bus & Tech
5	Georgia Mason	2008	Applied IT	IT	BS	School of Eng
6	Georgia Southern	2003	IT	IT	BS	Col of EIT
7	Indiana U-Purdue	2008	Comp & Info Sc	IT	BS	School of Science
8	Middle Georgia	2007	IT	IT	BS	School of IT
9	Oakland	2010	CS & Engin	IT	BS	School of Engin & CS
10	Purdue West Lafayette	2005	Com & IT	IT	BS	College of Tech
11	Purdue Calumet	2010	Com IT & Graph	CIT	BS	College of Tech
12	Rochester IOT	2003	IS & Tech	IST	BS	Coll of Comp & IS
13	Slippery Rock	2009	CS	IT	BS	Coll of Bus, IS & SS
14	Southeastern Louisiana	2011	CS & IT	IT	BS IT	Coll of Science & Tech
15	Southern Poly	2007	IT	IT	BSIT	Sch of Comp & Soft Eng
16	U of Toledo	2010	Joint Depts	IT	BSIT	Col of Engin, Col of Bus
17	US Military Academy	2007	EE & CS	IT	BS	None
18	US Naval Academy	2005	CS	IT	BS	Math & Science
19	U Cincinnati	2006	School of IT	IT	BSIT	Col of Ed, CJ & HR
20	U Missouri-KC	2006	CS & EE	IT	BIT	Sch of Comp & Eng
21	U New Hampshire	2011	CS	IT	BSIT	CEPS
22	U North Florida	2007	Sch of Comp	IT	BS	Col Eng, Comp, Const
23	U South Alabama	2003	Sch of Comp	ITE	BS	None
24	Walden	2013	IT	IT	BS	School of IS & Tech

SOBIE 2014

25	Winston-Salem	2011	CS	IT	BS	Col of Arts & Sciences
----	---------------	------	----	----	----	------------------------

Table 4 ABET Accredited IT Programs in 2013

Additional Characteristics of ABET Accredited IS Programs.

In Table 5 the title of the IS courses in ABET accredited programs could be IS or CIS or MIS or ISM or BIS. There is no standard name for IS courses in an ABET accredited program. In Table 5 it can also be seen that most ABET accredited IS programs are BS degrees but there are 2 BBA degrees offered so it is possible for a BBA program to get ABET accredited.

In universities with an ABET accredited IS program, they generally do not also offer IT or engineering programs. However, all universities offering an ABET accredited IS program also offer a computer science program. It might be noted that most computer science programs are ABET accredited.

In Table 5, most universities offering an ABET accredited IS program do not offer a BBA IS degree, however, in many of these universities their business programs are AACSB accredited.

#	University	Year ABET Accred	IS Title	ABET IS Deg	Exis Of IT	Exis Of CS	Exis Of Engin	Exis Of BBA IS	Bus AACSB Accred
1	Arkansas Tech	2006	IS	BS	Y	Y	Y	N	Y
2	California SU, Chico	2008	MIS	BS	N	Y	Y	Y	Y
3	California U of Penn	2008	CIS	BS	N	Y	Y	N	N
4	Drexel U	2001	IS	BS	Y	Y	Y	Y	Y
5	East Tennessee SU	2010	IS	BS	Y	Y	Y	N	Y
6	Fitchburg State College	2006	CIS	BS	N	Y	N	N	N
7	Florida Memorial U	2008	CIS	BS	N	Y	N	N	N
8	Gannon	2004	MIS	BS	N	Y	Y	N	N
9	Grand Valley SU	2007	IS	BA	N	Y	Y	BA	Y
10	Illinois State U	2001	MIS	BiS	N	Y	N	BIS	Y
11	Jacksonville SU	2003	CIS	BS	N	Y	N	Mgmt	Y
12	James Madison	2003	CIS	BS	N	Y	Y	Y	Y
13	Kennesaw State U	2002	IS	BS	Y	Y	N	N	Y
14	Metropolitan S College	2005	MIS	BS	N	Y	Y	N	N
15	NJ Institute of Tech	2002	IS	BS	Y	Y	Y	N	Y
16	Pace U	2000	IS	BS	Y	Y	N	Y	Y
17	Quinnipiac U	2005	ISM	BS	N	Y	Y	N	Y
18	Radford U	2008	IS	BS	N	Y	N	N	Y
19	Regis U	2010	CIS	BS	N	Y	N	N	N
20	Robert Morris U	2001	ISM	BS	N	SE	Y	N	N
21	Rowan U	2006	MIS	BS	N	Y	Y	N	Y
22	Slippery Rock	2003	IS	BS	Y	Y	N	N	N
23	Southern Utah U	2009	IS	BS	N	Y	Y	N	Y
24	SUNY Brockport	2011	CIS	BS	N	Y	N	Y	Y

SOBIE 2014

25	U of Tampa	2009	MIS	BS	<i>N</i>	<i>N</i>	<i>N</i>	<i>N</i>	<i>Y</i>
26	U Arkansas, Little Rock	2006	IS	BS	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>
27	U Houston, C of Tech	2009	CIS	BS	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>
28	U Houston-Clear Lake	2004	CIS	BS	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>BS</i>	<i>Y</i>
29	U Nebraska, Omaha	2002	MIS	BS	PhD	<i>Y</i>	PhD	<i>N</i>	<i>Y</i>
30	U North Alabama	2006	CIS	<i>BBA</i>	<i>N</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>
31	U North Florida	2001	IS	BS	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>
32	U of South Alabama	2001	IS	BS	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>
33	U South Carolina	2004	BIS	BS	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>
34	Utah S U	2005	CS	BS	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>BA</i>	<i>Y</i>
35	Utah Valley U	2007	IS	BS	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>N</i>	<i>Y</i>
36	Virginia Commonwealth	2001	IS	BS	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>
37	West Texas A&M U	2011	CIS	<i>BBA</i>	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>	<i>Y</i>
38	Wright SU	2004	MIS	BS	<i>N</i>	<i>Y</i>	<i>Y</i>	<i>N</i>	<i>Y</i>

Table 5. ABET Accredited IS Programs in 2013

Conclusion

At one time many IS and IT faculty assumed that ABET accreditation would become the standard IS and IT accreditation, as it is for computer science and engineering. If you look at Table 1 and 2, it can be seen that the growth rate of ABET accredited IS and IT programs has slowed down to a virtual halt. In 2012 and 2013 there were no new IS programs ABET accredited and in 2012 and 2013 there was only one new IT program AABET accredited. It can be concluded that ABET accreditation has not yet become the standard accreditation for IS programs and this does not appear likely to happen in the near future.

35 of the 38 IS programs that are accredited by ABET are BS degrees.

Most of these BS degrees are located in non-business colleges that are more technically oriented

There has been a slow but a steady growth of ABET accreditation of IS programs (38 programs in 10 years)

After 10 years, only 25 IT programs are ABET accredited.

ABET accredited IT programs are not located in a College of Business

Of the 25 ABET accredited IT programs, 8 are located in IT departments, 7 are located in CS departments, and 10 are located in joint depts. IT departments can be located in many different IT & CS departments

The bottom line is that the growth of ABET accredited IS programs has slowed down and it appears that ABET accreditation of IS programs has not yet become the standard IS accreditation like engineering & CS and there is no indication that this will happen in the near future.

If an IS program is not in a School/College of Business, they should consider ABET accreditation

References

- AACSB (2014). Accreditation. Retrieved April 1, 2014, from <http://www.aacsb.edu/accreditation/>
- ABET (2014a). Accredited Information Systems Programs, -ordered by name. Retrieved April 1, 2014 from <http://main.abet.org/aps/Accreditedprogramsearch.aspx>
- ABET (2014b). Criteria for Accrediting Computing Programs. Retrieved, April 1, 2014, from <http://www.abet.org/accreditation-criteria-policies-documents/>
- Challa, C.D., Kasper, G.M., & Redmond R. (2005). The Accreditation Process for IS Programs in Business Schools. *Journal of Information Systems Education*, 16 (2), 207-217.
- Gorgone, J. T. (2003). ABET's General Accreditation Criteria to Apply to All Computing Programs, *the Special Interest Group on Computer Science Education (SIGCSE) Bulletin*, 35(4), 14-16.
- Gorgone, J.T. (2004). Draft Information Systems Accreditation Criteria for 2006, *the Special Interest Group on Computer Science Education (SIGCSE) Bulletin*, 36(2), 15-17.
- Hilton, T. S. & Stone, M. (2003). MIS Program Accreditation: Comparing AACSB and ABET. *International Association for Computer Information Systems (IACIS)*, Retrieved from <http://isedj.org/isecon/2003/2211/ISECON.2003.Hilton.pdf>
- Hilton, T. S., Johnson, D. A., & Kasper, G.M. (2004), ABET Accreditation of MIS Programs in AACSB Schools, *In the Proceedings of Information Systems Education Conference (ISECON)*, 21, 1-16.
- Hilton, T. S. & Lo. B. W. (2007), IS Accreditation in AACSB Colleges via ABET, *Journal of the Association for Information Systems*, 8(1), Article 1 1-15
- IS Departments, ISWorld (2005), Retrieved from <http://www.georgiasouthern.edu/~rmackinn/infosys/na.htm#usa>
- Jones, C. G. (2004). An Analysis of Programmatic Differences Between Dual ABET/AACSB and ABET-Only Accredited Information Systems Programs, *International Association for Computer Information Systems (IACIS)*, 2, 544-530.
- Kohun, F. G. & Wood, D.F. (2003). The ABET CAC Accreditation Experience – Intent and Reality – the Information Systems Perspective, *Journal of Information Systems Education*, 1(43), 3-11.
- Kohun, F. G. & Wood, D.F. (2004). The ABET CAC Accreditation: Is Accreditation Right for Information Systems?, *International Association for Computer Information Systems (IACIS)*, 2, 579-583.
- Kohun, F.G. DeLorenzo, G.J. & Roull, A. F. (2011) Are All Information Systems Created Equal – Does Accreditation Solidify Information As a Discipline?, *International Association for Computer Information Systems (IACIS)*, 12, 2, 264-272.
- Landry, J.P. & Daigle, R. J. & Longnecker, H. E. & Pardue, H. (2009) IS 2002 and ABET Accreditation: Meeting the ABET Program Outcome Criteria, *ISECON*, 26, 1-5.
- Larson, S., Harrington, C., (2012) A Survey of ABET Accredited Information Systems Undergraduate Programs in the USA, *EDSIG, IS Educators Conference*, v29, 1-18.
- MacKinnon, R. J. & Butler, S.E. (2005). How Do IS Programs Compare with ABET Accredited Programs? *International Association for Computer Information Systems (IACIS)*, 6, 332-338.

MacKinnon, R. J., & Elder, KL, & Dyer, JN. (2012). The Current Status of ABET Accreditation of Information Systems Programs,. *Issues in Information Systems*, Vol. 13, Issue 1, pp 151-159.

MacKinnon, R. J. & Han, HJ. (2008). An Analysis of IS Programs Accredited by ABET, *Communications of the IIMA*, 8,1,43-52.

Management Information Systems Rankings (2011), US News and World Report, Retrieved March 5, 2012 from

<http://colleges.usnews.rankingsandreviews.com/best-colleges/rankings/business-management-information-systems>

Saulnier, B., & White, B., (2010). IS 2010 and ABET Accreditation: An Analysis of ABET-Accredited Information Systems Programs, *Journal of Information Systems education*, V22, N4, pp 347-354.

Topi, Heikki (2011) *IS Education: Accreditation of Degree Programs in Information Systems*, *ACM SIGCSE Bulletin*, Volume 41, Issue 2, June 2009, 70-71.

In-Memory Databases & Complex Event Processing: The Rise of Real-Time Computing with Predictive Analytics

John Dyer, Georgia Southern University
Kevin Lee Elder, Georgia College & State University
Ron MacKinnon, Georgia Southern University

Abstract

Recent trends in Enterprise Resource Planning revolve around the ability to provide powerful Business Intelligence reports in order for managers to make informed and timely decisions. Because of this trend, new technologies such as in-memory databases (IMDB) and complex event processors (CEP) have recently gained ground. The information contained herein outlines the nature of both technologies, while providing measures of performance. Also included are descriptions of several key vendor offerings within the realm of in-memory and complex event processing. Both technologies offer distinct enhancements to current ERP systems. The scope of this review is best served by explaining IMDB and CEP independent of each other, then describing how they can be used in tandem to enhance firms in various industries.

Background

Over the years, computer storage has evolved from vacuum tubes and magnetic drums to hard drives, floppy disks, compact disks, and flash drives. Common to most large organizations lately are three-tier architectures that include a presentation, application, and database tier. The presentation tier allows an end-user to interact with the application tier via a Graphical User Interface (GUI). The application tier houses groups of programs and ERP modules needed to perform business transactions. The database tier includes the servers that are responsible for storing data by writing it to disk and retrieving pertinent pieces of data when requested. The 3-tier architecture is widespread and common for organizations that need to gather, store, and retrieve massive amounts of data. However, the speed at which data is aggregated, retrieved, and presented (under the three-tier architecture) is under scrutiny given the rise of in-memory database computing and complex event processing. This literature review explains in-memory databases, provides metrics in regard to the speed of in-memory computing, details on various vendor's in-memory offerings, rules to follow during installation, and the benefits of in-memory computing as well as skepticism of IMDB. Further, this review explains complex event processing, vendor offerings, the benefits within different industries, and how it can be coupled with IMDB to provide automated responses to real-time events.

An Explanation of In-Memory Databases

Put simply, in-memory database processing equals more data, faster. In-memory databases rely on main memory to store data, which provides faster access to data because of

the reduction in input/output reading activity that used to take place in the database server (In-memory database, 2011). An in-memory database system allows data from an entire database to be stored in the main (i.e. volatile) memory resulting in exponentially faster response times for queries and transaction processing. A multitude of recent sources indicates support for the transition to in-memory databases. Much of the support for IMDB revolves around the metrics that have gauged the milliseconds at which these systems are able to perform activities.

In-Memory Database Computing Metrics (Sybase, SAP, and Oracle)

Sybase created an in-memory database processing product aptly named Adaptive Server Enterprise (ASE). In a May 2011 press release, SAP announced a merger with Sybase to enhance its reach into both IMDB and CEP. Specifically, SAP stated that “Sybase will be able to bring its complex event processing and analytics expertise, which was built in the financial sector, to customers in other industries, markets and product areas in which SAP has a complementary, strong presence” (SAP, 2010). SAP was also looking to enhance its database business in order to enter into the in-memory market. Sybase provided the technology that allowed SAP to become a player in both markets.

In a recent performance test, Sybase ASE found performance improvements over the standard I/O disk in several key areas. Using Sybase ASE in-memory computing, transaction processing improved by 1.3-2.2 times compared to disk. Incoming streaming market data processing improved by 4-6 times. Telecommunications call processing improved by 1.5-4 times, and batch processing of Data Manipulation Language (DML) improved by 1.4-2.8 times (Sybase, Inc., 2010). The acquisition of Sybase allowed SAP to create an in-memory solution called SAP HANA (High Performance Analytics Appliance) – based off of Sybase ASE technology.

Jaikumar Vijayan’s article on ComputerWorld.com noted that SAP HANA was able to provide a consumer goods company 450 billion records in a matter of seconds based on complex queries, compared with the hours it would have taken previously. While SAP HANA is a late-arrival to the in-memory space, it is able to leverage its existing relationships with customers in order to provide a solution that can pull information directly from previously implemented SAP ERP modules. Another advantage of HANA is that it is designed to work within “non-SAP” computing environments. Therefore, SAP can also market HANA to customers outside of its current client base (2010).

A report from SAP’s website summarized test results from HANA’s performance running on IBM hardware. The report stated “complex queries, such as understanding trends in the sales organization or material sales, were performed against 1.3-terabyte databases and returned results within seconds.” During the test, HANA was able to perform extensive analytics in lock step with incoming data. SAP HANA was tested against 10 analytical query streams and four operational reporting streams. Under these conditions, it was able to produce 10,000 queries per hour. The results of these tests allowed insight into the fact that literal, real-time data analytics is truly possible (SAP, 2011). While SAP HANA is a

powerful solution, Oracle too provides an in-memory mechanism that has garnered industry attention.

Oracle TimesTen 11g is an in-memory database processing solution that is able to work in standard SQL-based interfaces. Oracle's internal tests revealed that it takes TimesTen less than 15 microseconds to update a record and less than a mere five microseconds to read a record (Oracle, 2009). Furthermore, real world applications of Oracle's TimesTen solution have helped financial services' company Duetsche Bors reduce its order processing time by 70-95% (Oracle, 2009). Oracle In-memory processing has also helped KTF, a Korean-based mobile communications company; increase its transaction speed by 1,000 percent, with a 1 millisecond average response time (Oracle, 2008). These metrics are a good starting point to begin to understand the computing power of in-memory databases. The following section provides a detailed analysis on how SAP HANA and Oracle TimesTen increase performance in particular ERP modules.

A Detailed Look at In-Memory Database Solutions

SAP HANA:

In a 2011 presentation to the American SAP User Group, Carsten Hilker (SAP, Solution Manager) outlined how SAP HANA can specifically enhance Profitability Analysis (CO-PA) reporting. SAP HANA's CO-PA Accelerator provides a highly integrated, customer-defined Profitability Analysis in which it pulls data from many modules within SAP (see Appendix 1). Hilker noted that process performance, data volumes, and speed of analysis currently challenge extreme profitability insight. An example of how business performance is impacted is in the poor profitability reporting and slow month-end closing runtimes. Also, current systems provide only limited profitability insight due to large or incomplete data sets. And the lack of access to trusted profitability data in a timely manner, leads to suboptimal business decisions. Hilker identified that the amount of data provided via in-memory solutions creates value by "providing transparency, enabling experimentation to discover needs, exposing variability, and improving performance." Because of automated algorithms embedded in SAP HANA, human decision-making can be supported. Furthermore, it allows population segmentation to customize actions for specific customer groups. Perhaps the most telling advantage of in-memory computing with SAP HANA is the fact that it can provide a potential increase of 60% in an organization's operating margin.

Hilker (2011) ultimately provided three simple reasons to why in-memory computing is relevant for not only Profitability Analyses, but also other business exchanges. Reason 1: In-memory database processing speed allows an organization to do more in the same time, dig deeper when needed, and to disengage in reports with previously prohibitive runtimes. Reason 2: The generated results give an organization the ability to process high volumes of data in order for analysis of complete and current data sets (i.e. consolidated, multi-year line-item and life-time analysis). Reason 3: Access to instantly available data provides relevant information, resulting in user-initiated automated decision-making.

Another advantage of moving to in-memory database processing is that the traditional database does not have to be immediately abandoned. If an organization chooses the SAP

HANA solution, the firm can use it as a secondary database. In so doing, archived data that was originally stored in the traditional database can be seamlessly transported to HANA. At this point, the data is available at a 100-times faster rate. Organizations can then phase out traditional databases, because all data will be replicated on the in-memory database. While there are concerns that the data now resides in volatile memory, in-memory databases such as HANA do have archiving capability. This allows data to be retrieved that might have been potentially compromised due to an unexpected power outage. If a firm chooses to employ a cutover strategy to SAP HANA, it can be achieved. Hilker states that it is a “non-disruptive installation, adding instant value with no implementation project required” (2011).

Oracle TimesTen 11g:

Oracle TimesTen In-Memory Database 11g can operate either in physical memory using standard SQL interface or as an in-memory database cache to enhance throughput and response time. TimesTen is a relational database with a standard SQL interface that stores all data in main memory. In doing so, all network latency and disk input/output (I/O) is eliminated. Because the data is stored in-memory, it is “closer” to the application server. The result is elimination of worry regarding network speed or traffic congestion common on traditional databases. TimesTen, much like SAP HANA, can be used either to replace an existing database or as a cache to accelerate the existing applications. In regards to implementation, TimesTen is compliant with existing code frameworks. Therefore, it does not require developers to learn new skills (Oracle, 2011).

Benefits of SAP HANA vs. Traditional Databases

In order to provide insight into the speed at which in-memory computing operates, SAP performed tests using traditional reporting tools against HANA-accelerated reporting tools. An in-memory versus traditional database test scenario with 120 line items, on product-related dimensions for a single company, revealed the following. In-memory reporting provided information directly at the line-item level in less than one second; there was no limit on drill-downs, and the data was immediately available for reporting. With the traditional ERP reporting database, it took several minutes to provide pre-calculated data aggregation levels. And in some cases drill downs were not possible because they were dependent upon whether aggregate data existed.

Another database test scenario, involving 85 line items of overhead costs relating to single product sales quantities, revealed the following. The in-memory database accelerated the reading time from greater than one hour to less than 30 seconds for reference data. In addition, the in-memory database allowed a product data-search that returned a result in less than one second. With a traditional database, this type of search was only possible with index support. Ultimately, these test cases showed that no data aggregation levels were even required with in-memory; however, with a traditional database, time-consuming optimization of pre-calculated data aggregation levels was needed.

The top value drivers for implementing SAP HANA (CO-PA Accelerator specifically) include revenue growth across products, regions, divisions, and customer segments; improved profitability within gross margins and at the product, region, and

division level; and improved effectiveness through faster response to changing product cost structures and the ability to make profitable portfolio decisions quickly. These improvements are possible because HANA provides real-time access to massive amounts of profitability data, accelerations in the cost allocation process, flexible and unconstrained profitability reporting through Business Intelligence tools, and rapid, non-disruptive deployment. The benefits of in-memory database processing with SAP HANA include the speed of profitability which helps accelerate financial performance, leading to powerful insights that unlock opportunities, thereby empowering users with access to trusted data to optimize profitable business decisions. The benefits are evident, but installation will not happen without proper planning and coordination (Hilker, 2011).

Installing an In-Memory Database

Deploying an in-memory database is a comparatively simple task taking into account the painstaking amount of time required for a full ERP implementation. Installing an in-memory database is a process that can be measured in weeks as opposed to months or years in the case of large ERP implementations. While IMDB is a shift in the structure of how data is stored, the complexities of installation can be streamlined with proper planning and execution. It is imperative that a company install and set up an IMDB in alignment with the vendor and hardware team. This ensures that the proper IMDB is selected and it will run on the chosen (or existing) hardware. Frequent contributor to the SAP Journal, Tony de Thomasis, concludes that successful IMDB installation comes down to sizing, backup/restoration, automatic patching, and identifying and resolving early performance problems. In order to achieve these goals, it is important to make sure the IMDB will align with current systems, determine feasible replication options (Examples based on SAP HANA: Sybase Replication Server for non-SAP data sources; SAP Landscape Transformation trigger-based replicator), and ensure a front-end reporting tool such as SAP BusinessObjects is up and running (2011). It is also worth reaching out to organizations (or business units) that have already been through an installation. There is no exception for deployment experience, and the insight gained from these types of relationships will only improve the flow of performance during installation. Yes, this is new technology, but that does not mean it has not been tested, installed, and used elsewhere. Taking advantage of other installation use-cases is an important part of the go-live procedure. In-memory computing does offer many exciting benefits, but considerations to data volatility and implementation costs are a concern within the industry.

Challenges of In-Memory Solutions

David Menninger, in his article, “Advantages and Challenges of In-Memory Databases and Processing,” examines that while the idea behind in-memory computing is grand, there are serious considerations that need explanation. Menninger’s concerns with in-memory databases revolve around recoverability of data, the cost of memory, and the cumbersome calculations. By their very nature, in-memory databases rely on volatile memory. Thus, these databases are seemingly susceptible to loss of data during power outages. Menninger explains that in pursuing an in-memory computing environment, an organization must be comfortable with completing streaming data operations with a safety

net. Because there is no disk I/O, in-transit data may be lost during a power surge. At the very least, the firm is now reliant on the system of record that generated the piece(s) of data. In addition to the reliance on volatile memory, Menninger ascertains that in-memory databases are also more expensive than traditional database systems. This claim is supported by the fact that more and more data is readily available within organizations; therefore, “memory...exact a premium relative to the same quantity of disk storage.” Even though an overwhelming majority (84%) of organizations indicates that they would like to employ forecasting efforts into their day-to-day operations, the article indicates that in-memory databases would provide too much data for the current spreadsheet-style calculations. Menninger is skeptical that current RAM can handle this amount of data in a reasonable fashion. However, he does conclude that in-memory will provide promise when recoverability and cost concerns are harnessed and when in-memory systems mature to a point that they can handle the complex data calculations needed for forecasting (2010).

While Menninger has plausible cause for skepticism of a somewhat new technology, industries are eager to learn what IMDB could mean for their balance sheets. Companies beginning to adopt in-memory solutions are doing so because of the value found in data being readily available. Complimentary to data availability, is the ability to analyze streams of data in real-time allowing subsequent answers and action in real-time. Therefore, in-memory database processing is only half of the puzzle. A review of complex event processing software solutions provides evidence that actionable data can provide measurable results within many industries.

An Explanation of Complex Event Processing

Complex event processors allow data that is fed into a system in real-time to be extracted in real-time. CEP cuts out the “Capture, Structure, Store” model that most BI systems currently use and replaces it with a real-time integrated technique (Illapani, Kwong, Herbas, & Welsh, 2010). The roots of CEP can be traced back to the financial sector. Because of the large volumes of data related to trading on Wall Street, a mechanism was needed to sift through the data and provide quick solutions to intricate problems. Out of this setting came complex event processing. The processors act like “If, Then” statements within a set of coded instructions. For example, a piece of financial data is linked to a stock price. If a stock price dips low, then the system could be triggered to send a buy notification, and if the stock price were to unexpectedly jump high, then the system could automatically trigger a sale. The obvious advantage of CEP is the fact that data is understood and acted upon in real-time allowing businesses to be more agile in how they operate.

CEP Systems and Benefits

Oracle, IBM, and Microsoft were the early frontrunners in the CEP arena. With SAP’s acquisition of Sybase, it was not only able to move into the IMDB market, but it was also able to introduce its own CEP solution (SAP BusinessObjects Event Insight) in early 2011 (Kanaracus, 2011). Oracle CEP provides “both a visual development environment as well as standard Java-based tooling (see Appendix 2). Because Oracle has built their product in industry standards such as ANSI SQL, Java, Spring DM and OSGI, their CEP provides the

opportunity for an organization to analyze complex events throughout the enterprise. Oracle uses these standards as a key selling point for organizations that may be hesitant about rolling out a new product. By building their CEP solution on common standards, the implementation curve can be flattened (Oracle, 2011). Merv Adrian, and IT Market Strategist, published an article related to IBM InfoSphere Streams predicting that “stream-based computing [would] change the world.” Particularly, Adrian was referring to IBM’s solution that had already provided success to financial institutions that were able to harness the CEP technology to make on-the-fly investment decisions (2009). Microsoft’s StreamInsight system targets many of the same opportunities as Oracle, IBM, and SAP: monitoring events, triggering responses, and providing predictive analytics. While Oracle takes advantage of its widely-used SQL standards, Microsoft takes advantage of the .NET framework upon which so many companies have built their system platforms (Microsoft, 2011). Complex event processing provides many benefits including: business process monitoring, algorithmic trading, fraud detection, and risk management, network monitoring for intrusion detection, and sensor network applications for Radio-Frequency Identification (RFID) reading. While the choice of CEP system may be based on previous experience or complimentary, pre-existing software, each solution is built based on a widely adopted principle: REAL real-time data aggregation and automated decision-making is not only possible but also necessary to compete at a high level within many different industries. Furthermore, when CEP is used in conjunction with IMDB, it allows organizations to become truly “live enterprises.” As such, live enterprises are those that are utilizing the power of both in-memory computing and complex event processing.

Live Enterprise Results within Industries and Organizations

It is hard to imagine an industry that would not be better off by providing a way to automate decision making based on massive amounts of data stored in main memory. Because IMDB and CEP are only in infantile stages, it seems that these systems are only beginning to scratch the surface of what is possible. The positive implications of CEP for financial services companies have been touched on previously; however, what does CEP combined with IMDB mean for government agencies, logistics enterprises, telecommunications companies, toll roads, or the utilities industry?

Within the realm of government agencies, an exciting opportunity for live enterprises is that it provides law enforcement individuals to learn about gang activity before crimes take place. With IBM InfoSphere Streams, police can use real-time data mining analytics to provide the location of street gangs based on cell-phone and GPS devices. This information could then be used to automatically send notifications to patrol cars to arrive at specific locations in order to prevent crime (IBM, 2011).

Canadian National Railway (CNR), based out of Montreal, was a first-mover into the use of SAP HANA powered by BusinessObjects Event Insight. Specifically, it is using the software combination for near real-time visibility into fuel consumption and train handling. CNR is able to extract data at the rail-car level, which provides g-force information. Based on g-force levels, the complex event processors can make decisions based on the contents of the rail car. If the g-force levels exceed a certain number, then the rail-car load is in danger

of being damaged. Therefore, triggers built into the system can automatically send notification to deploy a replacement shipment. CNR is also working on a way to use the data provided by CEP to make operational decisions on “whether it would be cheaper to have a train refuel at the next refueling station, or to send out a refueling truck” (Kanaracus, 2011).

Within the telecommunications world, Oracle CEP combined with TimesTen 11g is providing practical solutions for cable companies. Household event data is provided by cable boxes in customer’s homes. These boxes provided information in regard to the amount of time a cable box is “On” and “Off.” Furthermore, the cable companies gather data based on viewing trends. The result of the data aggregation is ability of cable companies to immediately offer additional services based on recently watched TV shows (Oracle, 2011).

Roadway toll companies are also seeing the benefits of complex event processing. In a use-case defined by Oracle’s website, toll road companies are using CEP to track the amount of road traveled by cars and trucks. In effect, the toll company can charge exact amounts based on the amount of road traveled. Systematically, the CEP system tracks entry and exit points on a road equipped with active-sensor charging gates. Oracle CEP defines triggers based upon when vehicles enter the specific roadway. The CEP system tracks the exit point based on whether another trigger is “hit.” However, if only one trigger is calculated by the system, then it is understood that the car exited the toll road, thus is charged an exact amount (Oracle, 2011).

Both Oracle CEP and SAP Event Insight have found traction within the utilities industry. Smart meter analytics is a capability provided by advancements in meter reading technology. Traditional meter reading, in which an individual is sent on-site to read the kWh output of a meter, is quickly becoming a thing of the past. Companies are replacing traditional meters with ones that are equipped with antennas that provide data specific to power usage for homes, neighborhoods, buildings, and regions. By monitoring via smart meters a CEP system can understand usage patterns and automatically allocate power as needed. In emergency situations, such as power outages, CEP systems are able to provide back-up power to certain locations quicker than when traditional meters and grid systems were in place (Oracle, 2011). Besides the organizations mentioned previously, others moving toward live enterprises include: Avaya, Bear Stearns, Caterpillar, Cisco, Colgate-Palmolive, J.P. Morgan, Nestle, P&G, Sprint, and T-Mobile.

Conclusion

In summation, in-memory databases are systems that rely on main memory for data storage, instead of writing said data to a disk. Because data stays in main memory, it allows REAL real-time data processing, as data is readily available. Previous 3-tier systems relied on data being sent to database server, which wrote data to a disk, then retrieved it when needed. IMDB brings the application and database tier together to increase speed at which transactions and queries can be processed, reduce (or eliminate) disk space, and reduce the amount of staff required for disk-memory systems. Complex event processing provides firms that ability to take immediate action based on data collected in real-time. Used in combination with each other, IMBD and CEP provide countless opportunities for many different types of organizations to improve their reach and profit-generating capability.

References

In-memory database. (2011, November 23). Retrieved October 11, 2011, from Wikipedia: http://en.wikipedia.org/wiki/In-memory_database

Adrian, M. (2009, May 22). InfoSphere Streams Is A Game Changer. Retrieved November 15, 2011, from IT Market Strategy: <http://public.dhe.ibm.com/software/data/sw-library/ii/analystreport/ITMarketStrategy2009-InfoSphereStreams.pdf>

Hilker, C. (2011). High-performance profitability analysis with SAP HANA CO-PA. ASUG. Atlanta.

IBM. (2011). InfoSphere Streams for Smarter Governments. Retrieved December 3, 2011, from IBM: <http://www-01.ibm.com/software/data/infosphere/stream-computing/smarter-governments.html>

Illapani, P., Kwong, K., Herbas, F., & Welsh, C. (2010). SAP BusinessObjects Event Insight: SAP's for Complex Event Processing Engine for the Business User. SAP.

Kanaracus, C. (2011, February 23). SAP Enters Complex-event Processing Market. PC World.

Menninger, D. (2010, November 27). Advantages and Challenges of In-Memory Databases and Processing. Retrieved November 5, 2011, from David Menninger Blog: <http://davidmenninger.ventanaresearch.com/2010/11/27/advantages-and-challenges-of-in-memory-databases-and-processing/>

Microsoft. (2011). Microsoft StreamInsight. Retrieved December 3, 2011, from MSDN Microsoft: <http://msdn.microsoft.com/en-us/library/ee362541.aspx>

Oracle. (2008, March). KTF Improves Transaction Speed by 1,000% with Integrated Authentication Service System. Retrieved October 14, 2011, from Oracle: <http://www.oracle.com/technetwork/database/timesten/overview/ktf-case-study-129821.pdf>

Oracle. (2009, March). Deutsche Börse AG Triples Speed of Xentric Order Routing System with In-Memory Database. Retrieved October 14, 2011, from Oracle: <http://www.oracle.com/technetwork/database/timesten/overview/deutsche-borse-db-snapshot-130682.pdf>

Oracle. (2009). Oracle TimesTen In-Memory Database. Oracle.

Oracle. (2011). Complex Event Processing FAQ and Use Cases. Retrieved November 11, 2011, from Oracle: <http://www.oracle.com/technetwork/middleware/complex-event-processing/faq-100486.html>

Oracle. (2011). Oracle Complex Event Processing. Retrieved December 3, 2011, from Oracle: <http://www.oracle.com/technetwork/middleware/complex-event-processing/overview/index.html>

Oracle. (Director). (2011). Oracle TimesTen In-Memory Database [Motion Picture].

Oracle. (2011). Smart Meter Analytics Overview. Retrieved November 20, 2011, from Oracle: <http://www.oracle.com/technetwork/middleware/complex-event-processing/faq-100486.html>) (<http://www.sap.com/asset/index.epx?id=f202afc4-a780-4201-9a68-a9db2121cd03&name=SAP-Smart-Meter-Analytics-Overview-Video>)

SAP. (2010, May 12). SAP to Acquire Sybase, Inc. Retrieved October 11, 2011, from SAP.com: <http://www.sap.com/press.epx?pressid=13202>

SAP. (2011, March 11). SAP and IBM Test SAP® In-Memory Appliance Software and Demonstrate Incredible Results. Retrieved October 13, 2011, from SAP: <http://www.sap.com/corporate-en/press.epx?pressid=14906>

Sybase, Inc. (2010). Performance & Tuning for In-Memory Databases in Adaptive Server Enterprise 15.5. Dublin: Sybase, Inc.

Thomasis, T. d. (2011, September 28). SAP HANA best suited for solving ERP performance issues. Retrieved December 4, 2011, from TechTarget: <http://searchsap.techtarget.com/news/1280099273/SAP-HANA-best-suited-for-solving-ERP-performance-issues>

Vijayan, J. (2010, December 1). SAP's HANA will speed real-time data analytics. Computer World, pp. 1-2.

Does a Pitchers' Height and Weight Impact Performance: Evidence from Recent Major League Baseball Data

Abstract

A widely held belief in baseball is that taller, bigger pitchers have better performance. This might explain why the average baseball pitcher is 6'3" and 215 pounds, while in comparison the average male in the United States is 5'9 1/2" and 196 pounds. Over ninety percent of all pitched innings have been from pitchers six feet or taller. While pitchers are clearly tall, it is unclear whether a pitcher's height and weight actually improve or even impact their performance.

In this paper, we examine whether height and weight impact pitching performance in the 2013 Major League Baseball season. We find little evidence that a pitcher's height contributes to positive outcomes, with some of our results suggest that being taller is a drawback for pitchers and leads to poorer pitching outcomes. However, the main result in our research is that most estimates are not statistically significant, suggesting that height does not have an impact on pitching performance. The most likely explanation is probably that Major League Baseball pitchers do not constitute a random sample and that only players with proven pitching records make it to this highest level of baseball, whether it is because of or in spite of their height.

Introduction

It is a commonly held belief among scouts, general managers, coaches and fans that bigger, taller pitchers perform better. There are several theories of why a pitchers height and size might impact their pitching. According to Bejan et al. (2012) and the constructural law theory, the larger and taller an athlete is the more force he or she can apply to the ball as it is hurled forward. Accordingly, the constructural law theory of sports evolution predicts that height and weight for pitchers equates to velocity and greater speed. This is similar to golf, where the average golfer in the top 10 of driving distance was on average 2.5 inches taller than the golfers at the bottom 10. The idea is that a larger moving body can exert greater force.

Taller pitchers also have longer arms, creating more torque accelerating the ball. Taller pitchers are going to release the ball closer to the plate making it hidden from the hitter longer and reaching the base more quickly from the point of release. This means that the batter has less time to identify the pitch and must begin their swing earlier, making them more likely to make an error. Similarly, longer arms give a pitcher more leverage on the ball and thus the ability to throw faster (Ramsey, 2007).

According to Gassko (2006) bigger and taller pitchers may do better since their bodies can endure more stress. Thin pitchers do not pitch for as many years and are much less likely to be pitching at age 32 than all other pitchers. However, height does not seem to matter for survival or longevity. Taller pitchers allow for fewer home runs and more strike than short pitchers, but he suggests that may be due to the angle of their pitches. This different angle makes pitches look like they are coming from the sky and appear as if they

will be out of the strike zone, but gravity pulls it into the strike zone. A sinking ball is more likely to hit into the ground than a ball traveling horizontally. Along with gravity this downward movement is also a little faster. Taller pitchers may also appear more intimidating. Taller, bigger pitchers bring a more immediate fear, not because of their ability but because of how they look on the mound.

Another explanation is that there is a selection bias that occurs in earlier grades. This selection bias for tall pitchers over short pitchers, may mean that only the best shorter pitchers get a shot, while taller pitchers are given chances more freely. Similarly, shorter pitchers, especially right handed pitchers, know that they have very few chances so they work harder.

While pitchers are clearly getting taller, it is not clear that taller, bigger pitchers outperform smaller pitchers. “While the 69 best pitchers give hope to the bigger is better theory that many scouts, general managers, coaches and fans have assumed true for generation” (Lincoln, 2008), it appears to only be true for the top ten percent. Their results found that when you examine all pitchers there is little correlation between height and innings pitched or strikeouts, and there is only a very low correlation of (0.086) between height and VORB (value over replacement pitcher) in 2007.

One explanation for the lack of correlation between a pitcher’s size and performance, may be explained by Gladwell’s (2013) inverted-U curve. Relating performance to size in this case, we can see that at the beginning of the inverted-U curve which is represented by smaller pitchers, an increase in weight increases pitching performance. This is followed by the middle of the inverted U-curve, where an increase weight for the mid-size pitchers has little impact on performance and then to the right of the inverted U-curve with the tallest pitchers, extra weight actually starts to hurt pitching performance. Thus, adding weight (or strength) helps performance up to a point, but after that point weight gain doesn’t help and can eventually hurt a pitchers performance. This can be seen in Figure 1 below, which shows pitching performance and size (measured as height or weight).

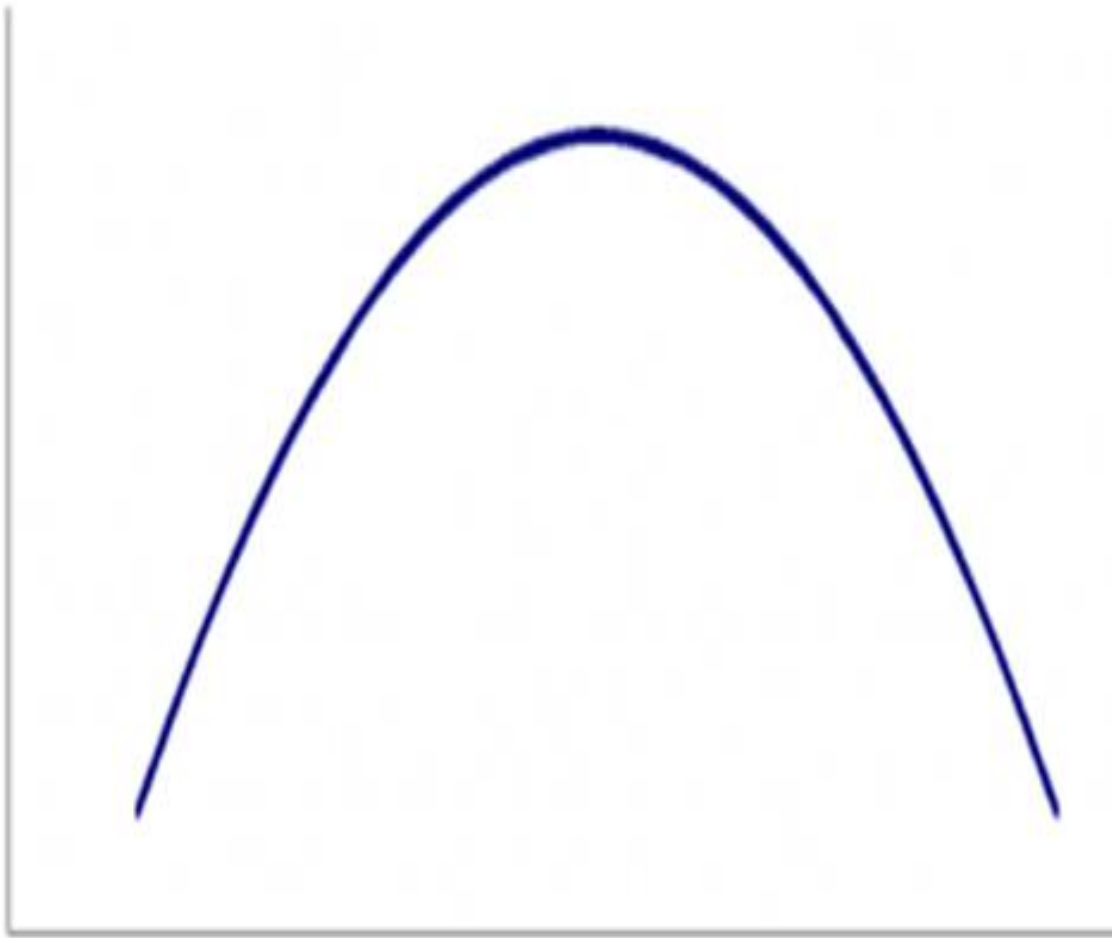
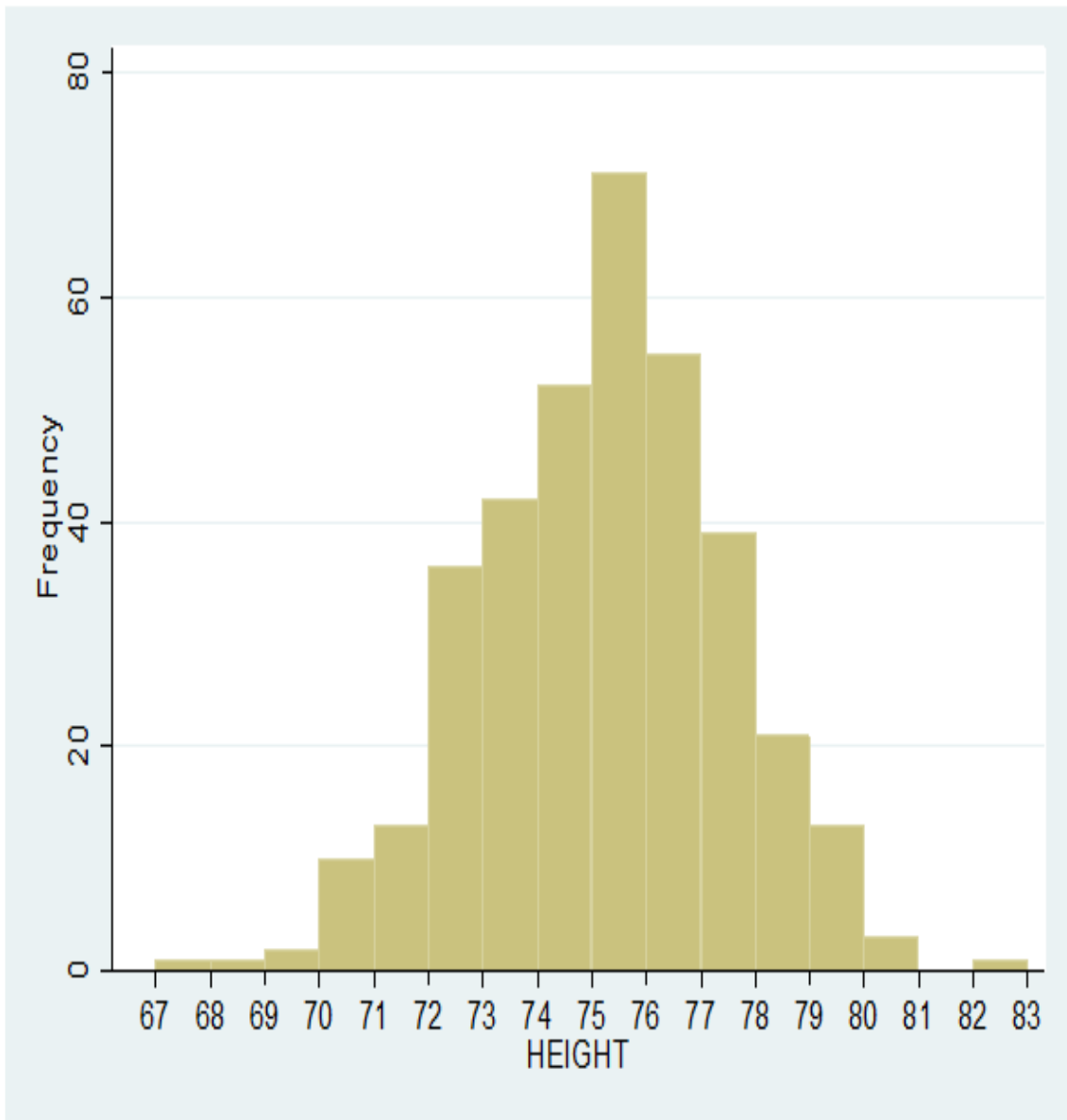


Figure 1: Pitching Performance and Size

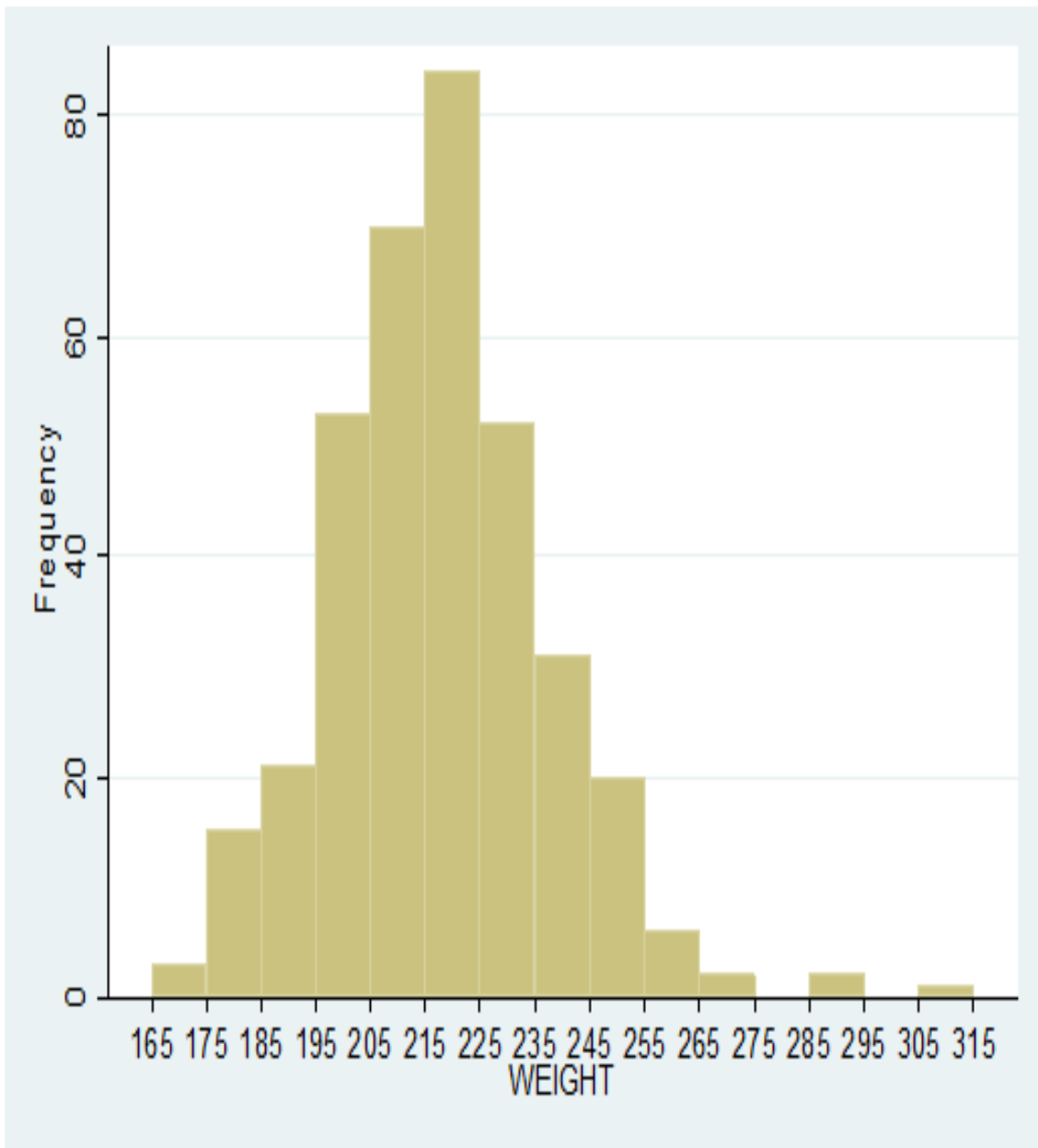
Cressey (2013) found that pitching is a combination of absolute and relative strength and power. From an absolute standpoint, more body weight equates to more force to push off the mound taken by the front leg, and more momentum moving downhill; that's why gaining weight can have such a profound impact on pitching velocity." In contrast, from a relative strength and power standpoint, eventually you max out on the force that you can create. He finds that pitchers over 6'5" do not thrive with weight gain the way that shorter guys do. Additionally, according Werner et al., the distraction forces on the shoulder are approximately 108% of body weight. Thus while an increase in body weight increases arm speed, it also increases shoulder distraction, which can create a negative impact on the body and thus overall performance. This is supported by Gassko's (2006) results showing that players 5'11 or shorter and pitchers 21 pounds or more overweight perform better than pitchers that are 6'5" or taller and 21 pounds underweight. However, he also finds that tall pitchers allow for fewer homeruns and more hits, which may occur because of the slope of the pitch that generates more ground ball tendencies for taller pitchers. His results show that less than 50% of thin pitchers survive to 32, suggesting that weight might help with durability. These conflicting results, suggest that it is not clear if an increase in weight or height should have a positive impact on pitching performance.

While it is unclear if it is better for a pitcher to be taller and bigger, it is clear that the typical pitcher is much taller and bigger than the typical U. S. male. While today the average baseball pitcher is over 6'2" and 215 pounds, the typical American male is 5'9" and 196 pounds. According to St. Onge et al. (2008), pitchers are 20 pounds heavier than the general population, but less obese. Not only are pitchers taller than the general population, they are taller than they were in the past. From 1960 to 2010 MLB players increased their height by 1.1 inches and their body weight by 23 pounds. By 2010, pitchers that were 6'2" pitched more innings than pitchers of any other height. In fact, 92.2 percent of innings pitched since 1960 have come from pitchers 6'0" or above and 99.3 percent of all innings pitched are from pitchers 5'10" or over (Lee, 2010). In 2009, all but 2 of the top 20 fastest pitchers were 6'2" or taller and in 2013, the top 10 strikeout pitchers were an average height of 6'5". While the majority of pitches today are thrown by players who are at least 6'2", less than 5% of the U.S. population is over 6'3".

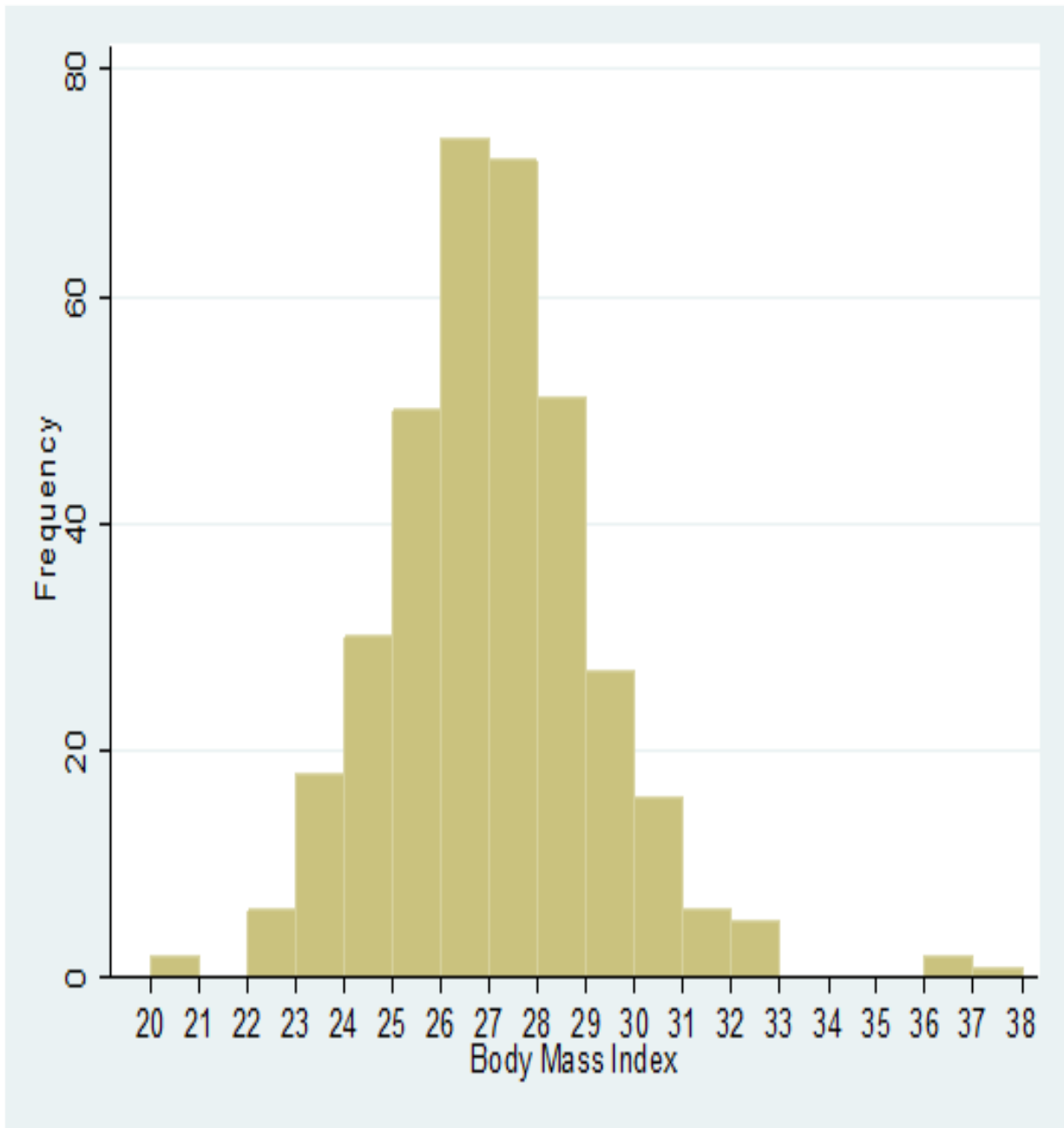
Graph 1 shows that in 2013, fifty percent of all MLB pitchers were between 6'1" and 6'4" and that ninety percent of all pitchers were between 6' and 6'5". Only 7.5 percent of pitchers or 14 people are shorter than 6 feet and only 17 pitchers are taller than 6 feet, 6 inches. This demonstrates that there is very little variation in height and suggests that at least for MLB pitchers there appears to be a body type. (We also allowed for the possibility of non-linear effects of height on pitching performance. Results are similar and available upon request.) Not only are pitchers taller than the general population they are also taller than other baseball players on the team. According to Christopher Lee, since 1960 the tallest players on the field are pitchers at 74.2 inches, while short stop are the shortest players with an average height of 71.2, a difference of 3 inches. Today, the average player of the MLB is close to 6'1.



Graph 1: Frequency Distribution of MLB Pitchers Height Included in Regressions



Graph 2: Frequency Distribution of MLB Pitchers Weight Included in Regressions



Graph 3: Frequency Distribution of MLB Pitchers BMI Included in Regressions

Results in Graph 2 and 3 show that pitchers are bigger than the general population. The average pitcher's weight is close to 220 pounds, plus or minus 15 pounds. Graph 2 displays very little variation in pitchers' weight, showing that with few exceptions, there is very little disparity between the smallest and the biggest pitchers. Graph 3 shows that BMI also shows a very tight distribution of pitchers size, with a typical pitcher having a BMI close to 27. Such a high BMI would suggest that most MLB pitchers are overweight, however not all weight is created equal. It depends on whether you carry the extra weight in arm, chest, and leg muscles or around the core, which might alter a pitcher's throw. We believe that most of the pitchers today are heavier due to muscle mass and weight training, not just too many hot dogs.

Collectively, these graphs suggest there is a specific body type for MLB players consisting of them being 6'3", 220 pounds, with a BMI of 27, with very little variation. According to Cressy (2013), the sweet spot for pitchers appears to be 6'3" 220 pounds. While he suggests that it is beneficial for a smaller guy to add weight, he finds that the heavier a person is the less sensitive they are to weight changes and that adding weight to a taller frame can do more harm than good. Similarly, he suggests that the prime age of pitchers is between 26 to 32. While this allows players to obtain more experience, he finds that eventually getting older and throwing more innings reduces pitching velocity. This was also supported by Dun et al (2006) who find that baseball players' peak in their late 20s and early 30s. In this paper, we examine the impacts of height and weight on pitching performance controlling for experience, pay and whether they are right or left handed.

Estimation and Data

We obtained data on Major League Baseball (MLB) pitchers for the 2013 regular season from [baseball-reference.com](http://www.baseball-reference.com). The URL for this particular data set is <http://www.baseball-reference.com/leagues/MLB/2013-standard-pitching.shtml>, and the data was augmented by individual pitchers' data on (relatively) fixed variables such as height and weight by following the hyperlink for individual players on the above-mentioned Web page. We have observations for all the variables of interest on 360 MLB pitchers for the 2013 season. The following table shows the means and standard deviations of the variables that are included in our analysis.

SOBIE 2014

Table 1: Means and standard deviations of variables

Variable	Mean	Standard Deviation
Runs	38.58	30.19
Home runs	8.88	7.68
Hits	81.32	63.87
Walks	27.53	20.07
ERA (Earned Run Average)	4.55	6.47
Home runs per game	1.15	2.12
Hits per game	9.14	4.79
Walks per game	3.51	3.23
WHIP (Walks plus Hits per Inning Pitched)	1.41	0.75
Strikeouts	72.42	56.90
Strikeout-to-walk ratio	2.68	1.40
Shutouts	0.12	0.42
Strikeouts per game	7.78	2.77
Pitcher's experience (years)	5.48	3.97
Pitcher's experience squared (years squared)	45.70	61.76
Annual salary (in thousands of dollars)	3662.53	4790.94
Dummy for left-handed pitchers	0.30	0.46
Pitcher's weight (lbs)	215.21	20.24
Pitcher's height (inches)	74.72	2.30
n = 360		

Data Analysis

Dependent Variables

In order to examine the impact of height and weight on a pitcher's performance while controlling for other relevant factors, we regressed a variety of measures for pitcher performance on a number of explanatory variables. We include several commonly used measures to assess a pitcher's performance. As measures that are considered "bad" outcomes for the pitcher, we use baseball statistics that are regarded as successes for the opposing batter, including walks, hits, runs, and home runs. As mentioned in the heading, all these measures capture a pitcher's performance over the course of the season. One issue with that is that players who get more playing time are likely to accumulate higher numbers than players who do not play as much. Arguably, a better measure of pitching performance would be on a per-game basis.

One of the most widely used statistics in evaluating baseball pitchers per game is the Earned Run Average (ERA, calculated as the number of earned runs given up by a pitcher per nine innings pitched). Similarly, we also examine walks per game, hits per game, and home runs per game were calculated by extrapolating the actual numbers in a game to a (in most cases hypothetical) 9-inning game played by the pitcher. Another widely used sabermetric measurement we used as a dependent variable is Walks plus Hits per Inning Pitched (WHIP), which, as the name suggests, indicates a pitcher's average walks and hits on a per-inning basis.

All the statistics to measure pitchers' performance discussed so far were successes for the opposing batter, i.e., they were "bad" things for the pitcher. There are various measures that are available in our data set that are considered successes for pitchers. We re-ran a set of regressions on the same set of explanatory variables with those measures for pitching success. On a per-season basis, they were: Strikeouts, strikeout-to-walk ratio, and number of shutouts.

Once again, one might argue that a more meaningful way to assess a pitcher's performance would be a measure that is calculated on a per-game basis. Hence, we also ran a regression that has "strikeouts per game" as the dependent variable

Independent variables

In order to study whether a pitcher's size has a meaningful impact on the various measures of pitching performance discussed above, we regressed a pitcher's height and then weight along with a set of independent variables that, a priori, can be thought of as having an impact on pitcher performance. The following section provides the motivation for including those variables as regressors along with an explanation of their construction, as applicable.

Our variables of interest are a pitcher's height and weight. It is a widely-held belief in baseball that a player needs to be tall and big to be a good pitcher. We are interested in the impact that height has on the various measures of pitching performance after a number of other factors are controlled for.

$$Performance = \alpha + \beta_1(Height) + \beta_2(Weight) + \beta_3(Salary) + \beta_4(Experience) + \beta_5^2(Experience) + D(Left) + \varepsilon$$

As controls, we included the following variables in our regressions: pitcher's weight, hand preference, salary and experience. While a pitcher's height has a positive correlation with a pitcher's height (correlation coefficient $r = .50$), the correlation is not strong enough to only use the pitcher's height. Weight may be an indication of a pitcher's strength, durability, or ability to move quickly, which may have an impact on the dependent variables used in the analysis. It is clear that managers and coaches care whether a pitcher is right handed or left handed, thus we use a dummy for left-handed pitchers: This variable takes on a value of "1" if a pitcher is listed as left-handed in the baseball-reference.com database, "0" otherwise. It will capture any possible difference in the various pitching outcomes that may exist between left-handed and right-handed pitchers.

Presumably, pitchers get better over time as they gain experience. In order to account for that effect, we created a variable that is constructed by subtracting a pitcher's age when he debuted in Major League Baseball from his current age. As suggested by Cressy (2013), the sweet spot for baseball player's is between the age of 26-33.

It is quite possible that the experience variable does not have a linear effect since the impact of experience on pitching performance may be stronger for younger players, but diminish over time. To allow for that possibility of a non-linear effect, we include the square of the experience variable as an additional regressor.

We also control for annual salary. This variable, measured in thousands of dollars, is also included in the individual player statistics that are accessible from baseball-reference.com. For multi-year contracts, we used the overall compensation and divided it by the number of years of the contract. While it can be argued that good pitching performance results in a contract with high compensation (i.e., that causation runs from performance to salary), such an effect has a time lag, i.e., pitchers who perform well (especially early on in their career) will often be rewarded financially in a *future* contract that is more lucrative than their current contract. We include the salary variable because pitchers are arguably paid high salaries currently because they are expected to perform well.

Results

Contrary to popular belief held by scouts, general managers, coaches and fans, our results in Table 2 suggest that being taller does not appear to improve pitcher performance. In fact, results in Table 2 show that height has the wrong sign and it is not statistically significant. This is true for the season as well as per game.

Perhaps the most notable result of Table 2 is that the majority of estimates are not what could be considered statistically significant using any conventional significance level. While it is a basic tenet that the fact that no effect could be found does not prove that no such effect does exist, the persistent lack of statistically significant estimates despite a good number of variations of models estimated does provide some indication that there may be few meaningful relationships between most of the dependent variables used and the independent variables in general and the height variable in particular. In addition to low p-values, many of the R-Squareds in the table above are quite low. More specifically, the highest R-Squareds are for regressions with per-season measures of pitcher performance.

SOBIE 2014

Table 2: OLS Regression of “Bad” Outcomes for Pitchers on Height and Control Variables

	Per Season				Per Game		
	Runs	Home runs	Hits	Walks	ERA	Home runs per game	Hits per game
Pitcher’s Height (inches)	1.11573 (0.72061)	0.24084 (0.18251)	1.50067 (1.50019)	0.02241 (0.49885)	0.14068 (0.174)	-0.00537 (0.05642)	-0.04 (0.12)
Pitcher’s Weight (lbs)	-0.04288 (0.08218)	-0.02628 (0.02081)	-0.95138 (0.17108)	-0.01011 (0.05689)	-0.01738 (0.01955)	-0.00110 (0.00643)	-0.00 (0.01)
Dummy for left-handed pitchers	-1.38390 (3.1300)	-0.89547 (0.79275)	-1.24599 (6.51617)	0.35924 (2.16679)	-1.10096 (0.74453)	-0.35373 (0.24507)	-1.032 (0.54)
Experience (years)	-2.83933** (1.15769)	-0.80232*** (0.29321)	-6.84568*** (2.41015)	-1.84732** (0.80143)	-0.45117 (0.27538)	-0.14000 (0.09064)	-0.21 (0.20)
Experience squared (years squared)	0.10164 (0.07120)	0.03485* (0.01803)	0.26175* (0.14822)	0.05288 (0.04929)	0.02348 (0.01694)	0.00667 (0.00557)	0.019 (0.01)
Annual salary (thousands of \$)	0.00316*** (0.00035)	0.00082*** (0.00009)	0.00721*** (0.00072)	0.00179*** (0.00024)	-0.00003 (0.00008)	0.00001 (0.00003)	-0.00 (0.00)
Constant	-35.80527 (47.79681)	-3.378218 (12.10574)	-10.83751 (99.50582)	29.05837 (33.08818)	-0.38696 (11.36947)	2.32010 (3.74237)	14.937 (8.39)
R-Squared	0.20	0.21	0.23	0.14	0.02	0.01	0.0
n = 360							

Standard errors in parentheses

*** Denotes statistical significance at the 1-percent level

** Denotes statistical significance at the 5-percent level

* Denotes statistical significance at the 10-percent level

One potential explanation for the lack of impact that size has on performance is that it may be due to Gladwell's (2013) inverted U curve, suggesting that an increase in size helps when you are smaller, has little impact if you are in the middle and can actually hurt you if you are too big. As Jay Nolan suggest, being too tall or big may slow you down, reduce your balance and makes it generally harder to control your body positioning.

Results in Table 2 show that increases in salary reduces pitching performance over the season and is statistically significant at conventional levels. One explanation for the unexpected sign and impact in our results is that instead of salary having a causal impact on player performance, the experienced, highly-paid players get more playing time, hence creating a statistically significant correlation with measures such as hits, walks, runs and homeruns. However, almost all of those statistically significant effects of salary on the various performance measures for pitchers disappear once the dependent variable is a per-game or per-inning measure, and the R-Squared becomes very low in those regressions.

A plausible explanation for the observed relationships is that high-salary pitchers are star players who will play "by default." That is, the statistically significant relationships between per-season measures on the left-hand side and salary are a statistical artifact that shows that high-salary pitchers play in more games than less-highly paid pitchers. This result supports that of Wiseman and Chatterjee (2003) showing that higher pay leads to better performance. However the impact is very small, supporting results by Blass (1992) that suggest that many players are overpaid and that their pay is not tied to current, but past performance.

Experience also appears to reduce performance for the season, but helps overall performance per game. Results from Table 2 consistently show that increases in experience help to reduce hits, runs, walks, and home runs. These results are statistically significant and contradicts results found by Bass (1992), who found that increases in experience increased salary, but not necessarily productivity. Results also support those found by Greenberg (2010) suggesting that being a left handed pitchers helps pitching performance.

Results in Table 3 continue to show that height and weight have very little impact on a pitchers' performance, once they are in the majors. This result supports that of Nate Silver (2005) who finds that pitchers performance is not as related to body size as offensive play. Looking at pitchers from 2004, he finds only a very weak correlation between height and strikeouts. Again, results suggest that experience and salary are statistically significant but small impact on pitching performance.

We next investigated whether height, weight, and BMI has different effects dependent on where in the distribution a pitcher is. For example, as suggested by the inverted U curve it could be that an increase in height does not have a beneficial impact for a pitcher who is close to the median of the height distribution, but it may help a pitcher's performance if they are among the shortest pitchers or hurt performance for the taller pitchers. We first estimated the previously presented regression model with ERA as the dependent variable. The regressors in the first two sets of regressions are height, weight, a dummy for left-handed pitchers, salary, experience, and experience squared. The height and weight variables are replaced by BMI in the third set of regressions (shown in Table 4 in the third column below). Below are the estimated coefficients results.

Table 3: OLS Regression of “Good” Outcomes for Pitchers on Height and Control Variables

	Per Season			Per Game
	Strikeouts	Strikeout-to-walk ratio	Shutouts	Strikeouts per game
Pitcher’s height (inches)	0.99510 (1.28761)	-0.00519 (0.03751)	0.00308 (0.01075)	-0.01799 (0.07379)
Pitcher’s weight (lbs)	-0.06681 (0.14684)	0.00027 (0.00424)	0.00196 (0.00123)	0.00587 (0.00841)
Dummy for left-handed pitchers	0.33333 (5.59282)	-0.15448 (0.16108)	-0.00911 (0.04670)	0.07177 (0.32050)
Experience (years)	-7.44313*** (2.06862)	-0.10735* (0.05929)	-0.01737 (0.01727)	-0.12581 (0.11854)
Experience squared (years Squared)	0.23441* (0.12722)	0.00518 (0.00363)	0.00087 (0.00106)	0.00563 (0.00729)
Annual salary (thousands of \$)	0.00728*** (0.00062)	0.00008*** (0.00002)	0.00003*** (0.00001)	0.00002 (0.00004)
Constant	15.75616 (85.40567)	3.12450 (2.51460)	-0.00978 (0.71320)	8.20337 (4.89427)
R-Squared	0.28	0.06	0.07	0.01

n = 360

Standard errors in parentheses

*** Denotes statistical significance at the 1-percent level

** Denotes statistical significance at the 5-percent level

* Denotes statistical significance at the 10-percent level

Table 4: ERA Quartile Regression for Height, Weight or BMI with Control Variables

Pitchers in the ...	Estimated Effect of		
	Height	Weight	BMI
1 st quartile of distribution	0.1817 (0.4536)	-0.1982 (0.1344)	-2.1825** (1.0859)
2 nd quartile of distribution	0.9897 (1.7777)	-0.1987 (0.1231)	0.2491 (0.5305)
3 rd quartile of distribution	N/A (no variation in height)	0.0143 (0.1200)	-0.5737 (0.3570)
4 th quartile of distribution	0.1874 (0.3168)	0.0026 (0.0216)	-0.2184 (0.3985)

Standard errors in parentheses

** Denotes statistical significance at the 5-percent level

As can be seen in Table 4, almost all of the estimated effects are not statistically significant at any conventional level. The one exception is the effect of BMI on a pitcher's ERA for pitchers whose BMI places them in the lowest quartile of the BMI distribution, supporting the idea of a potential inverted U curve for BMI. The p-value of that estimate is 0.048 and the estimate suggests that an increase in a pitcher's BMI of one would, on average, decrease the ERA by slightly more than two, which is a substantial decrease given that the mean BMI in the data set is approximately 4.5. Weight gain for the shortest players will help to increase their BMI, which is then shown to reduce their ERA. This suggests that shorter players could benefit from strength and weight training much more than taller pitchers.

So what other factors play a role in determining pitching performance? We can think of a number of variables that matters, but that are not captured in our data set. For one, there are numerous "immeasurables" such as a pitcher's innate ability, his understanding of the game and how to pitch given a certain situation, effort or determination to win, handling of poor weather conditions, etc. Other possible factors are measurable, but are not included in our data set. Examples include the number of different types of pitches (fastball, curveball, slider, sinker, etc.) that a pitcher has at his disposal, speed of a pitcher's fastball, proneness to injury, and physical strength.

Conclusions and Extensions

Contradictory to popular opinion, results suggest that being taller and/or bigger is not better for a pitcher. Results suggest that size does not improve pitching performance and that being bigger might actually hurt a MLB pitcher's performance. Height, weight and BMI are not statistically significant using any measure of pitching performance. Results do suggest that more experience increases a pitchers performance, suggesting that maybe scouts should recruit pitchers based on their experience not there size.

While not statistically significant, the fact that an increase in a pitcher's height seems to be associated with worse outcomes in most of the estimations deserves further examination. One possibility is that results are driven by the extreme values, e.g., it could be that height does not play a big role for, say, the middle two quartiles, but becomes a negative factor for extremely large pitchers. Results also may be driven by the lack of variation in MLB pitcher size. Again, most pitchers are close to 6'3" and 215 pounds, with very little variation.

A more plausible explanation may be that there is a selection bias that occurs well before pitchers make it to the pros. It might be that taller kids are encouraged from a very early age to become pitchers and that only the best shorter or smaller players are ever given a chance to pitch.

While our results suggest that pitchers height and weight does not increase performance, there has been a clear increase in pitcher's size over the past few decades. To examine how the increase in size, especially relative to the general population, over the past few years impacts performance, we would like to extend our data to include several years of data and then examine how height and weight impact pitching performance.

Results also suggest that paying pitchers more has very little impact on their pitching performance. If paying pitchers more does not improve results, it is unclear why owners would waste their money on high salaries for pitchers. However, there could be a lag between past pay and future performance or vice versa. We would like to further examine

the relationship between pitcher performance and salary by expanding our data set over several years. It might be that there is a lag between performance and pay.

References

A. Bejan, S. Lorente, J. Royce, D. Faurie, T. Parran, M. Black, and B. Ash, “The Constructal Evolution of Sports with Throwing Motion: Baseball, Golf, Hockey and Boxing” the *International Journal of Design and Nature and Ecodynamics*, 2012, Vol. 0, No. 0, 1-16.

Blass, Asher, A. “Does the Baseball Labor Market Contradict the Human Capital Model of Investment?” *The Review of Economics and Statistics*, 1992, Vol. 74 No. 2, May, 261-268.

Cressy, Eric, “Body Weight and Pitching Velocity. The Sabathia Conundrum”, Nov. 2. 2013.

Dun, S., G. Fleisig, G., Loftice, J., Kingsley, D. and J. Andrews “The Relationship Between Age and Baseball Pitching Kinematics in Professional Baseball Pitchers”, *Journal of Biomechanics*, 2006, Vo. 40, 265-270.

Gassko, David, “Does Size Matter”, September, 2006.

Gladwell, Malcolm, [*David and Goliath: Misfits, Underdogs, and the Art of Battling Giants*](#) 2013.

Greenberg, Glenn P. “Does a Pitcher’s Height Matter?” *Baseball Research Journal*, 2010, Fall.

Hamilton, Lincoln, “Scouting Science: Does Height Matter for MLB Pitchers”, *Project Prospect*, February 7, 2008.

Lee, Christopher, *Scouting Science*, March 2010.

Ramsey, Wayne, “Why tall baseball pitchers are better than short pitchers”, March 19, 2007.

Saint Onge, James, M. Patrick M. Kruger, and Richard G. Rogers, “Historical trends in height, weight, and body mass: Data from U.S. Major League Baseball Players”, *Economics and Human Biology*, 2008, Vol. 6, issue 3, December, 482-488.

Silver, Nate “Lies, Damned Lies, Does Size Matter” *Baseball Prospectus*, April 2005.

Werner, S., M. Suri, J. Guido, K. Meister, D. Jones, “Study Proves Body Weight is Pitching Velocity Factor” *Journal Shoulder Elbow Surgery*, 2008, Nov.-Dec. (17) 6, 905-908.

Wiseman, F. and S. Chatterjee, “Team Payroll and Team Performance I Major League Baseball: 1985-2002” *Economics Bulletin*, 2003, Vol. 1, No. 2, 1-10.

Using the Cloud to Teach ERP

Kevin Lee Elder, Georgia College & State University

Ron MacKinnon, Georgia Southern University

John Dyer, Georgia Southern University

Abstract

SAP has traditionally been the domain for the Fortune 500, companies with millions to spend on an ERP. Much the same has been the teaching of SAP Enterprise Resource Process (ERP) has followed the traditional IaaS (Infrastructure as a Service) model with a large mainframe ERP system that has kept ERP in the IS student domain and out of other disciplines. With SAP Business ByDesign, one of SAP's Software as a Service (SaaS) cloud solutions we have been very successful working with both technical and non-technical students. It is the ease with which non-technical business students can complete exercises throughout any business process that is exciting to educators. Small and medium business professionals should also take note to see how easy Business ByDesign is to implement and use. Exercises that students can complete range from standard procurement, to HR, to Business Intelligence, to Mashups, and analytics/reporting and beyond. If you only have experienced the big SAP ERP systems, read on to see what the cloud is all about and how SAP can help you harness it, while learning about a university where you might want to hire your next employees.

Background

The Enterprise resource planning (ERP) system is a large, complex software package that provides an integrated real-time environment based on an enterprise-wide data model with a set of software applications that allow processing of the core transactional data of the organization (Bancroft, Seip, & Sprengel, 1998). The past research literatures has renewed the understanding of ERP systems throughout the last decade. The researchers have split the past decade into four main periods. First, in the late 1990s, enterprises have requested the ERP system to cover all inter-organizational activities apart from the business network instead to require a mere material planning system. In the early 2000s, the expectation of the enterprises has shifted from a large number of unintegrated IT functions to a single integrated backbone. In the mid-decade, the enterprises requested to implement an ERP suite from one vendor that incorporated stand-alone point solutions to reach higher degree of integration and improve customer relationship and the supply chain's overall efficiency. Late in the decade, alternative approaches such as hosting, subscription-based pricing, and SaaS (Software as a Service) technology have attracted increasing attention (Shaul & Tauber, 2013).

Benefits of ERP Implementations

ERP implementation brings a lot of business benefits to organizations, such as the business benefit of improved management decision-making is an important goal of ERP

system adoption. (Staeher, 2010) A researcher conducted an investigation related to the rationales and business benefits for why organizations have a desire for ERP implementations. That research covered 12 industries and broke organizational agreed business benefits into tangible and intangible categories. According to (Deloitte, 1998) the tangible benefits include inventory reduction, personnel reduction, productivity improvements, order management improvements, financial close cycle reduction, IT cost reduction, procurement cost reduction, cash management improvement, revenue/profit increases, transportation/Logistics cost reductions, maintenance reductions and on-time delivery. Meanwhile, ERP system also bring intangible benefits including information/visibility, new improved processes, customer responsiveness, cost reduction, integration, standardization, flexibility, globalization, Y2K, business performance and supply/demand chain. There are other business benefits, O'Leary (2004) found a number of new benefits include acquisitions, new reports/reporting capability, sales automation, change business model/competitive advantage, growth, financial controls, better decisions, leverage size, increased time for analysis, no redundant data entry, reduce training with transfer and speed.

Drawbacks of ERP Implementations

As researchers have investigated the main drawbacks of the ERP implementation projects are too complex, demanding, expensive and risky (Stanciu & Tinca, 2013). Furthermore, a new survey on the small businesses shows about half of the investigated ERP projects taking longer time than expected, are exceeding the initial cost and budget, and lowering registered benefits realization (Krigsman, 2011).

Successes with ERP Implementations

CBR (2011) presented that the ERP market size has had stable growth over the past number of years with \$43bn in 2010, and \$40.6bn in 2009. Furthermore, the new prediction and observation has displayed that the global ERP market will meet \$45.5bn, and to \$50.3bn by 2015. This growth should show the excellent performance is enabled through the successful ERP implementation projects and strategies.

Enterprise Resource Planning applications allow users to centralize departmental data. In the past, each department would create and maintain its own data and then generate reports to influence resource planning. ERPs function across all departments of an enterprise and report from a central system. The application essentially takes the enterprise's data and converts it into knowledge that is then used to make informed decisions on business strategy (Gupta 2000).

Experiences of ERP Use in Small Enterprises

There have been two difficulties associated with ERPs with smaller enterprises. The first is establishing and maintaining the Information and Communications Technologies (ICT) infrastructure necessary to run these platforms and the second is the ability to determine the benefits realization. We are seeing the infrastructure necessary to operate

these platforms reduced in the last few years due to the emergence of web-based, Software as a Service (SaaS) platforms. Much of the past research accomplished in the area of ERPs in Small-to-Medium Enterprises (SME) and even microenterprises has been based on countries like India and China where these smaller enterprises make up the majority of their economies and have focused on those entrepreneur's and employee's inability to implement the application as well as having the resources needed to invest in the required ICT infrastructure. Overall, ERP implementation in India has been found to have a beneficial relationship to inventory, customer service, and communications (Kale, Banwait, & Laroiya 2010). So far, research does not provide any empirical data on this subject. It has, however, pointed to ERPs ability to highlight the relative importance of organizational processes and how they provide business value (Uwizeyemungu & Raymond 2012).

ERP adoption in SMEs has been the subject of much research. Whereas large enterprises tend to struggle with the change aspect of implementing an enterprise-wide software package, SMEs struggle with knowledge constraints associated with handling such a robust package (Laukkanen, Sarpola, & Hallikainen 2007). This is a telling trait of ERP use and will probably reflect on its use by microenterprise owners. Ultimately, we may need to have a better understanding of how strategies need to be different for each enterprise level for ERPs to be effective (Bohorqvuez & Esteves 2008). Part of these strategies will most likely focus on how well ERPs can be customized to support the needs of these different sized enterprises (Zach & Munkvold 2012). For this flexibility to occur, vendors will have to focus energies on understanding the organizational climates and technical perspectives of smaller enterprises (Upadhyay, Jahanyan, & Dan 2011).

The last few years have seen the infrastructure as a service platform, grow from being just a promising business concept to one the fastest growing platform of the information technology department (Dawoud, Takouna and Meinel, 2011). Post the recession; organizations have been realizing the effectiveness of adopting an infrastructure as a service platform. They are increasingly realizing the power of such infrastructures and the fact that by the simple adoption of these infrastructures, they can gain fast access to top notch business and client applications and boost their resources drastically, at negligible cost. A striking 91 percent of the organizations in United States and Europe agreed that reduction in cost is the primary reason for them to switch to infrastructure as a service environment (Van Vactor, 2012). According to Gartner, the cloud-based security services market will reach \$4.2 billion by 2016. This is primarily due to direct cost savings from ease of deployment and a considerably reduced technology maintenance burden.

Cloud Computing. Benefits, risks and problems for SMEs

There are many factors which should be minded when small and medium-sized enterprises are trying to adopt cloud computing application in their business. Budriene & Zalieckaitė (2012) explains the environment in which such businesses are acting and describes problems and challenges. These small enterprises could develop their own information and communication technology structure and strategy. Furthermore, a good example is Ireland. Carcary et al. (2013) describe Irish small and medium sized enterprises as an example for the adoption of cloud computing. They mentions that the cloud computing

sector is still growing. In the year 2011 it was the top technology priority worldwide and the market will grow up to 241 billion in the next 6 years. Cloud computing saves money (cost reduction), improves the scalability and many more parts. SME are different to the bigger companies and this is one reason why cloud computing offers big advantages for these companies. Half of the investigated companies in Ireland did not adopt any cloud services. Most of the others, who have adopted cloud services, did not do it deep enough for their business (Carcary, Doherty, & Conway, 2013). On the other hand using cloud computing has risks and treats for enterprises. There are risks in the phase of the adoption of a cloud service and also later in the process. Cloud security experts have named 39 risks which are described in this article. Under the top ten some risks are caused by the technical complexity but also planning mistakes are in the top ten. (Dutta, Guo Chao Alex, & Choudhary, 2013)

Small and medium sized businesses have to manage a big amount of data from various departments of their company. Accounting data is a big player in terms of decision making. Data of all departments are coming together. Normal accounting software is usually not capable to manage and to analyze this amount of data for decision making because of their complexity and largeness. Cloud computing is good a opportunity to avoid these problems. There are advantages and disadvantages of such a move of the accounting software into the cloud. Therefor Lithuanian small and middle sized companies were investigated after their move to the cloud. The author came to following advantages: Reduced costs, Security, Respond to business, Easy administration, Compliance and Global access. The following disadvantages were noted as well: Fear for safety, Internet failures, Control loss, Dependency (Christauskas & Miseviciene, 2012). Gupta et al describe cloud computing as a business factor for small and middle-sized enterprises based on the increased speed of the internet. Five factors including ease of use, security and privacy are mentioned. These factors are important for the implementation of cloud services (Gupta, Seetharaman, & Raj, 2013).

SAP ByDesign in the Classroom

With SAP Business ByDesign, one of SAP's Software as a Service (SaaS) cloud solutions businesses can use an ERP in the cloud and not on premise. As you can see in Figure 1, ByDesign offers a full spectrum ERP tools for the organization.

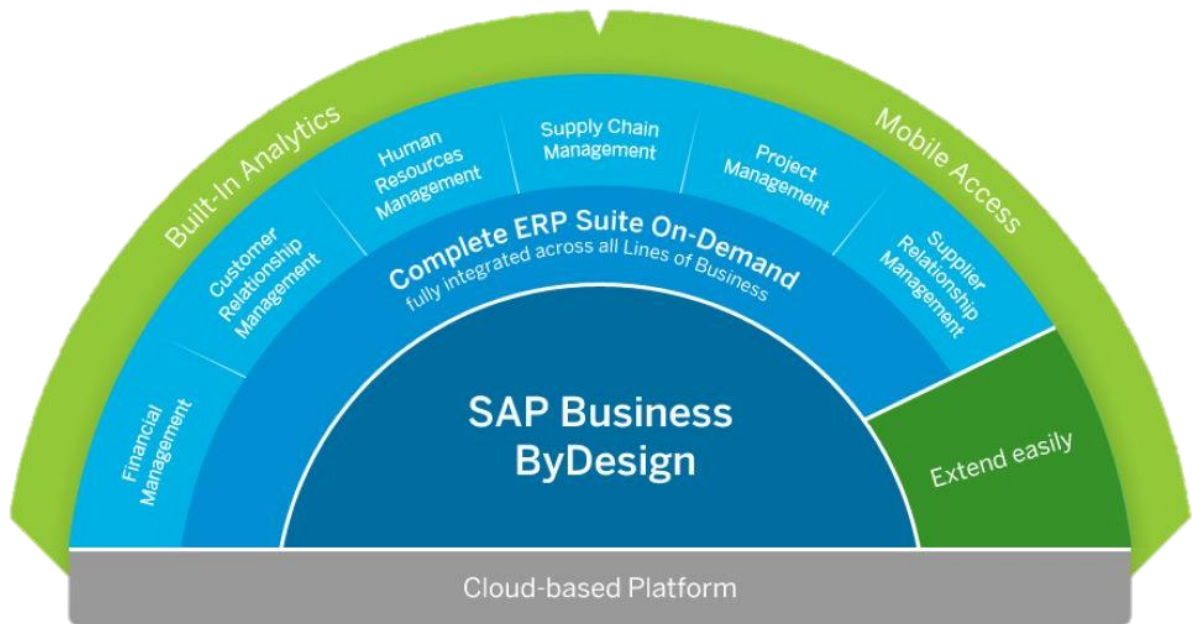


Figure 1 – Overview of SAP Business ByDesign

The employees of the organization or the students in our classroom have access to an on demand deployment model, running in the SAP Cloud. It offers a full suite covering all relevant aspects of a Business. It has a large set of scenarios & processes built in as you can see from the screen shot of the help system in Figure 2.

SAP Business ByDesign

End-to-end Business Scenarios

- Cash and Liquidity Management
- Customer Contract Management
- Customer Return Management
- Demand Planning
- Expense Reimbursement
- Field Service and Repair
- Financial Closing
- Fixed Asset Management
- Intra-company stock transfer
- Intercompany Project Time and Expense
- Make-to-Stock
- Marketing-to-Opportunity
- Order-to-Cash (standardized services)
- Order-to-Cash (project-based services)
- Order-to-Cash (sell-from-stock)
- Order-to-Cash (third-party order processing)
- Order-to-Cash (specified products)
- Payroll Services
- Physical Inventory Management
- Procure-to-Pay (non-stock)
- Procure-to-Pay (services)
- Procure-to-Pay (stock)
- Product Catalog Management
- Product Definition
- Product Development
- Product Engineering
- Project Management
- Quality Assurance (unplanned inspections)
- Request-to-Resolve
- Resource Management
- Strategic Sourcing
- Supplier Return Management
- Time and Labor Management
- Workforce administration and authorization






© 2012 SAP AG. All rights reserved. 33

Figure 2 – Help System With Built-In End-to-End Business Scenarios

Business ByDesign is built on a Service Oriented Architecture and is model driven. It is modular and flexible as well as being easy to configure and modify as you can see in the screen shot in Figure 3.

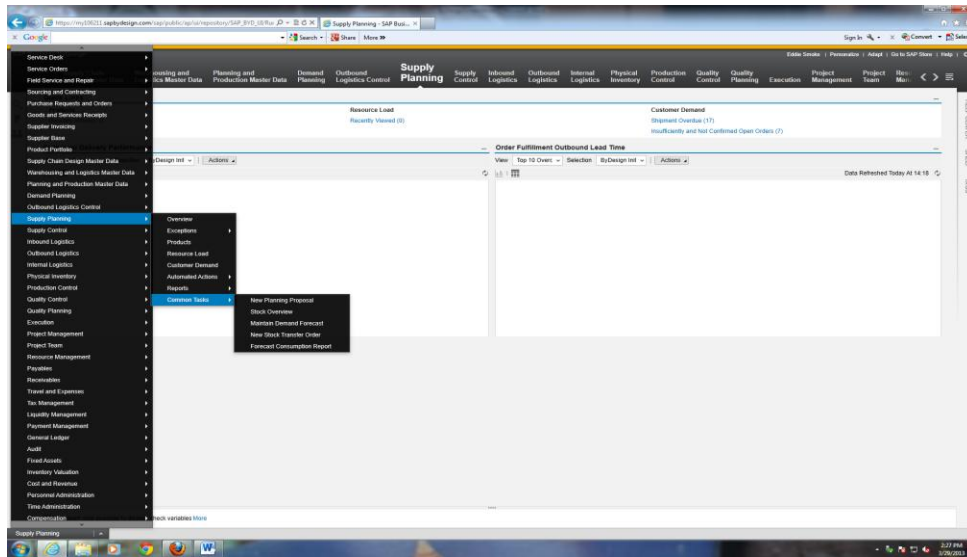


Figure 3 – Sample Menu Structure

The screenshot displays the 'Outbound Delivery Performance by To - Selection' report. The report includes a table with columns for Order ID, Line Item, Product, Requested Delivery Date, Delivery Date, Requested Quantity, Deviation to Requested Date, Deviation to Confirmed Date, and Deviation to Promised Date. The data is color-coded: red for negative deviations and green for positive deviations.

Order ID	Line Item	Product	Requested Delivery Date	Delivery Date	Requested Quantity	Deviation to Requested Date	Deviation to Confirmed Date	Deviation to Promised Date
1091	10	P104201	11/30/2010	11/30/2010	1.00 ea			
1050	10	P104432	12/03/2010	02/08/2011	6.00 ea	67.00	41.00	41.00
1064	10	P104432	12/16/2010	12/16/2010	5.00 ea			
1066	10	P110310	12/05/2010	12/17/2010	504.00 box	-8.00	-8.00	
1067	10	P110401	12/05/2010	12/17/2010	190.00 ea	-8.00	-8.00	
1068	10	P104433	12/17/2010	12/17/2010	5.00 ea			
1069	10	P104431	12/05/2010	12/16/2010	725.00 ea	-8.00	-8.00	
1070	10	P10202	12/16/2010	12/21/2010	430.00 ea	3.00		
1071	10	P10203	12/16/2010	12/21/2010	430.00 ea	3.00		
1087	10	P110310	01/30/2011	01/19/2011	504.00 box	-8.00	-8.00	
1088	10	P110401	01/20/2011	01/19/2011	190.00 ea	-8.00	-8.00	
1089	10	P104433	01/20/2011	01/19/2011	5.00 ea	-1.00	-1.00	-1.00
1090	10	P10203	01/20/2011	01/19/2011	420.00 ea	-15.00	-15.00	-15.00
1091	10	P10202	01/20/2011	01/19/2011	410.00 ea	-15.00	-15.00	-15.00
1092	10	P104431	01/20/2011	01/19/2011	725.00 ea	-8.00	-8.00	
1154	10	P104431	03/31/2011	04/01/2011	1,500.00 ea	1.00		
1177	10	P110310	04/23/2011	04/24/2011	504.00 box	1.00	-2.00	-2.00
1178	10	P110401	04/23/2011	04/24/2011	190.00 ea	1.00	-2.00	-2.00
1179	10	P104433	04/24/2011	04/24/2011	5.00 ea	1.00	-2.00	-2.00
1184	10	P104431	05/05/2011	04/29/2011	725.00 ea	-8.00	-8.00	-8.00
1192	10	P10202	05/13/2011	11/19/2011	410.00 ea	188.00		
1193	10	P10203	05/13/2011	04/30/2011	430.00 ea	-13.00	-13.00	-13.00
1202	10	P110435	05/08/2011	05/07/2011	2.00 ea	-1.00		
1222	10	P10202	06/06/2011	05/29/2011	410.00 ea	-13.00	-13.00	-13.00
1223	10	P10203	06/06/2011	05/29/2011	430.00 ea	-13.00	-13.00	-13.00
1224	10	P104433	06/20/2011	05/29/2011	5.00 ea	1.00		

Figure 4 – Sample Report with Analytics and Usability Built In

Business ByDesign gives the user an intuitive user experience that includes ample collaboration capabilities, business insight and analytics built in to educate the employees and students on how to effectively run their business as witnessed in Figure 4 above. The flexibility, extensibility and partner platform with an integrated knowledge base, built in compliance, and built in service and support makes Business ByDesign easy to use and even

easier for the user to interact with the data with built in reports and applications as exemplified in Figure 5 below.

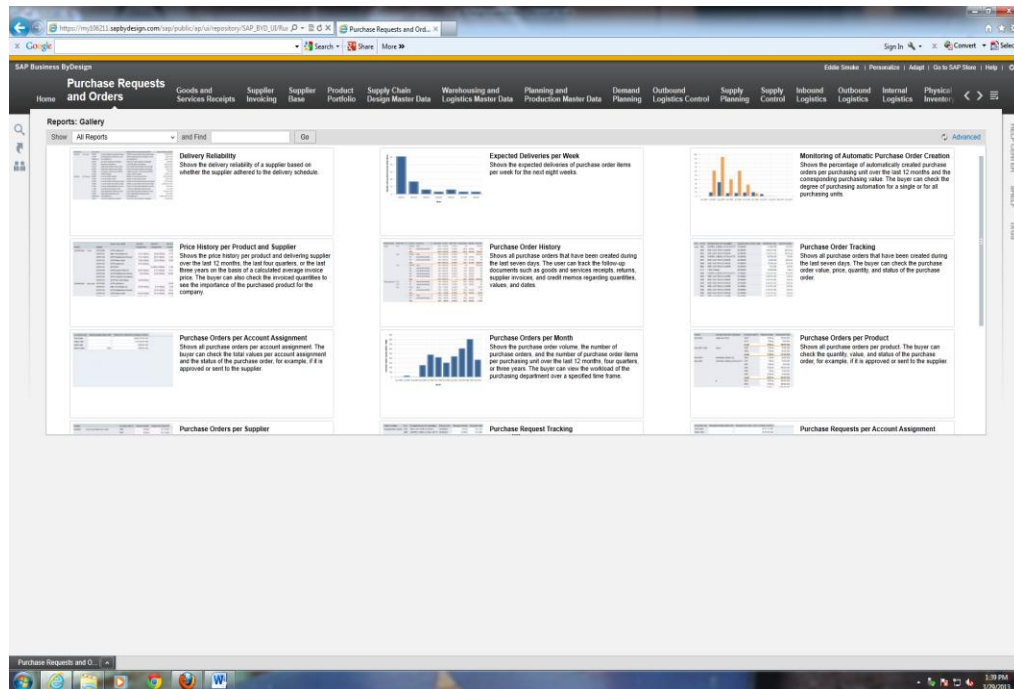


Figure 5 – Sample Report By Functional Logins

Thus we have begun using ByDesign in the classroom to teach ERP in order that the students may graduate and go out to work in small and medium size businesses instead of being locked in to the larger Fortune 500 companies. We have been very successful working with both technical and non-technical students. As you can see in Figure 6, ByDesign has a nice best practices for standard business processes built-in that educate employees and students as they interact with the ERP using a comfortable Graphical User Interface that users find easy to use and navigate.

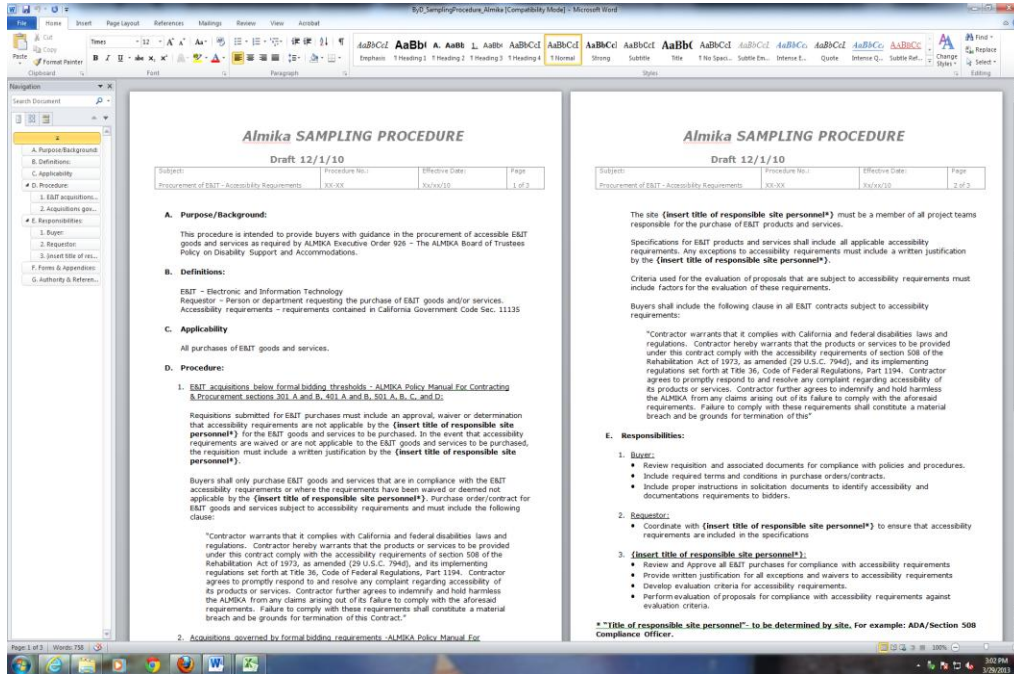


Figure 6 – Sample Business Best Practices Built-in to Business ByDesign

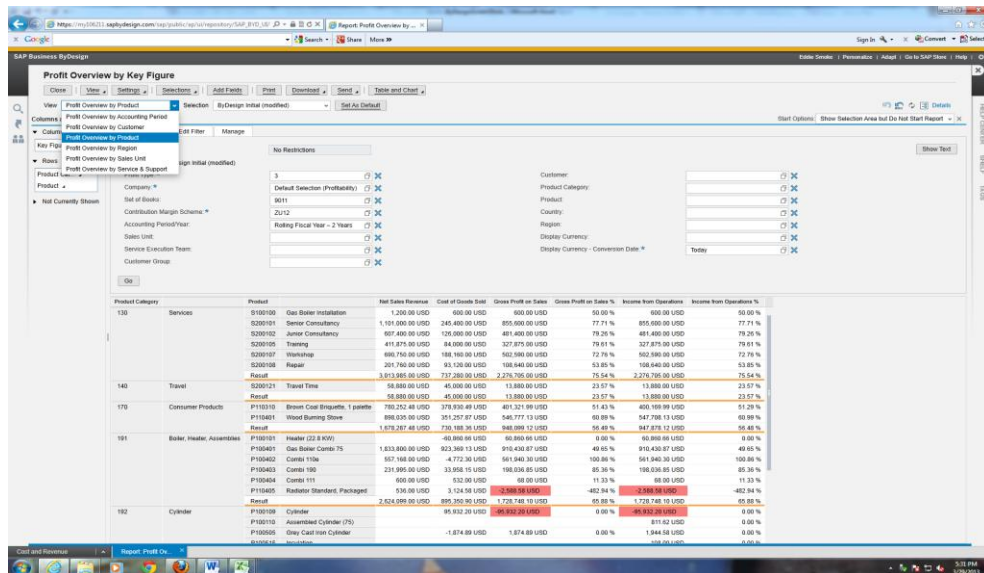


Figure 7 – Sample Business Profitability Built-in to Business ByDesign

It is the ease with which non-technical business students can complete exercises throughout any business process that is exciting to educators. Small and medium business professionals should also take note to see how easy Business ByDesign is to implement and use, as again demonstrated with the profitability analysis example screen shot in Figure 7 above. Students can navigate through the system and use all the graphical tools to make their ERP system easy use as finally exemplified in Figure 8 below.

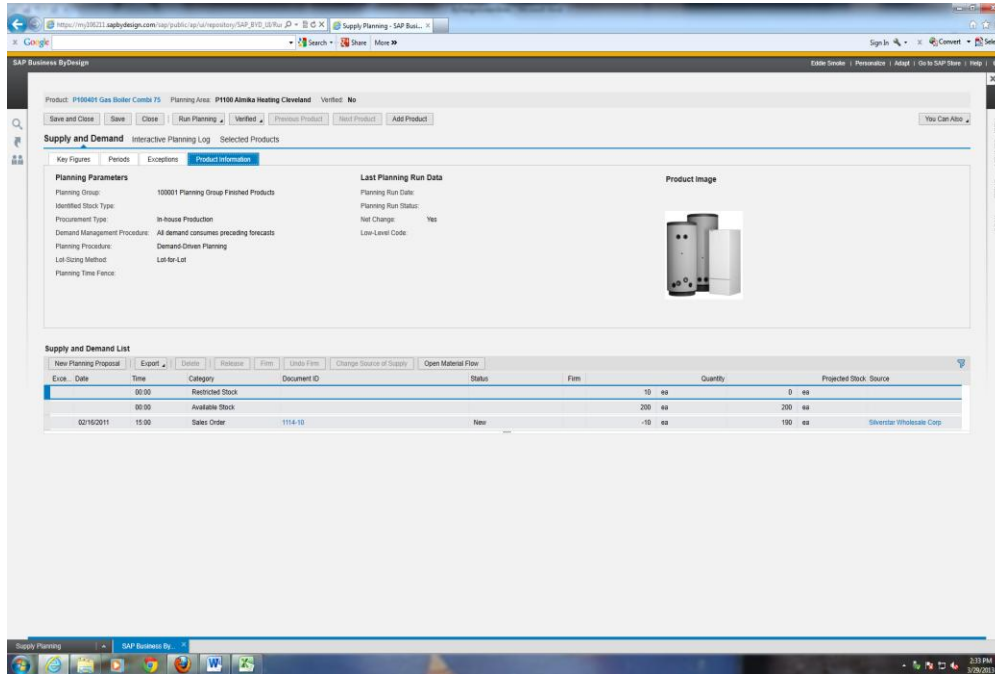


Figure 8 – Sample Product Data Capabilities Built-in to Business ByDesign

Conclusion

ERP systems don't have to be large, expensive or hard to use. SAP Business By Design allows the educator or small business owner exercises that students or employees can complete in minutes that range from standard procurement, to HR, to Business Intelligence, to Mashups, and analytics/reporting and beyond. Customization of an ERP helps your organization put the whole ERP fully integrated into your business or classroom. Training/Teaching best practices will make your organization or students more successful. SMEs can implement an ERP today and best practices can be incorporated into any size organization. Knowing your Processes will make you operate more efficiently. Mapping your Processes to your ERP is crucial for success. Teaching/Training does not have to be painful, expensive or periodic, it can be an ongoing everyday event on the cloud. If you only have experienced the big SAP ERP systems, I urge you to check out SAP Business ByDesign and consider using it in your small to medium sized business or in the classroom to send your students out into the world of industry ready to use the Cloud for ERP.

References

- Bancroft, N., Seip, H., & Sprengel, A. (1998). *Implementing SAP R/3*. In 2. edn (Ed.), Manning. Greenwich, UK: Manning.
- Bohórquez, V., & Esteves, J. (2008). Analyzing SMEs Size as a Moderator of ERP Impact in SMEs Productivity, *Communications of the IIMA*, 8(3), 67-II. Retrieved from <http://search.proquest.com/docview/205910727?accountid=11078>
- Budrienė, D., & Zalieckaitė, L. (2012). Cloud Computing Application in Small and Medium-Sized Enterprises, *Issues of Business & Law*, 4, 199-130. doi: 10.520/ibl.2012.11
- Carcary, M., Doherty, E., & Conway, G. (2013). Understanding and Supporting Cloud Computing Adoption in Irish Small and Medium Sized Enterprises (SMEs), *Proceedings of the European Conference on Information Management & Evaluation*, 10-17.
- CBR. (2011, May 6). ERP Market to Grow to \$50.3BN in 2015: Forrester, Retrieved from CBR:Your tech social network: <http://www.cbronline.com/news/tech/software/enterprise-apps/erp-market-to-grow-to-503bn-in-2015-forrester-060511>
- Christauskas, C., & Miseviciene, R. (2012). Cloud -- Computing Based Accounting for Small to Medium Sized Business, *Inzinerine Ekonomika – Engineering Economics*, vol. 23, no 1: 14-21.
- Dawoud, W., I Takouna, & C Meinel. (2010). Infrastructure as a service security: Challenges and solutions, *Informatics and Systems (INFOS)*, 2010 The 7th International Conference on, pp. 1-8.
- Deloitte, C. (1998). *ERP's Second Wave*, New York: Deloitte Consulting.
- Dutta, A., Guo Chao Alex, P., & Choudhary, A. (2013). Risks in Enterprise Cloud Computing: The Perspective of IT Eexperts, *Journal of Computer Information Systems*, 53(4), 39-48.
- Gupta, A. (2000). Enterprise Resource Planning: The Emerging Organizational Value Systems, *Industrial Management + Data Systems*, 100(3), 114-118, Retrieved from <http://search.proquest.com/docview/234918044?accountid=11078>
- Gupta, P., Seetharaman, A., & Raj, J. R. (2013). The Usage and Adoption of Cloud Computing by Small and Medium Businesses, *International Journal of Information Management*, 33(5), 861-874. doi: <http://dx.doi.org/10.1016/j.ijinfomgt.2013.07.001>
- Kale, P. T., Banwait, S. S., & Laroiya, S. C. (2010). Performance Evaluation of ERP Implementation in Indian SMEs, *Journal of Manufacturing Technology Management*, 21(6), 758-780. doi:<http://dx.doi.org/10.1108/17410381011064030>

Krigsman, M. (2011, March 1). 2011 ERP survey: New IT failure research and statistics, Retrieved from ZD Net: <http://www.zdnet.com/blog/projectfailures/2011-erp-survey-new-it-failure-research-and-statistics/12486>

Laukkanen, S., Sarpola, S., & Hallikainen, P. (2007). Enterprise size matters: Objectives and constraints of ERP adoption, *Journal of Enterprise Information Management*, 20(3), 319-334. doi:<http://dx.doi.org/10.1108/17410390710740763>

O'Leary, D. (2004). Enterprise Resource Planning (ERP) Systems: An Empirical Analysis of Benefits, *Journal of Emerging Technologies in Accounting*, pp. 63-72.

Shaul, L., & Tauber, D. (2013, August). Critical Success Factors in Enterprise Resource Planning Systems: Review of the Last Decade, *ACM Computing Surveys*, Vol.45 (Issue 4), p39-55.

Staehr, L. (2010). Understanding the Role of Managerial Agency in Achieving Business Benefits from ERP Systems, *Info Systems Journal*, 20, 213-238.

Stanciu, V., & Tinca, A. (2013). ERP Solutions Between Success and Failure, *Accounting and Management Information Systems*, Vol. 12, (No. 4), pp. 626-649.

Upadhyay, P., Jahanyan, S., & Dan, P. K. (2011). Factors influencing ERP Implementation in Indian Manufacturing Organisations, *Journal of Enterprise Information Management*, 24(2), 130-145. doi:<http://dx.doi.org/10.1108/17410391111106275>

Uwizeyemungu, S., & Raymond, L. (2012). Impact of an ERP System's Capabilities Upon the Realisation of its Business Value: A Resource-Based Perspective, *Information Technology and Management*, 13(2), 69-90. doi:<http://dx.doi.org/10.1007/s10799-012-0118-9>

Van Vactor, Stephanie L. *The Networked Enterprise: An Examination of Methodologies Companies Can Use to Reduce Their Risks, Enhance Security, and Implement Effective Policies in a Web 2.0 World*, Diss. Utica College, 2012.

Zach, O., & Munkvold, B. E. (2012). Identifying Reasons for ERP System Customization in SMEs: a Multiple Case Study, *Journal of Enterprise Information Management*, 25(5), 462-478.

FACTORS AFFECTING AVAILABILITY OF COMPREHENSIVE CARE FOR THE ELDERLY WITHIN A STATE

Avinash Waikar – Southeastern Louisiana University

Samuel Cappel - Southeastern Louisiana University

Kyle Meguess - Southeastern Louisiana University

Abstract

It is a general belief that seniors with chronic medical needs are better cared for in their homes and communities whenever possible resulting in more desirable outcomes. Such all inclusive comprehensive care options are offered in communities and funded by Medicare and Medicaid for the elderly in an effort to seek a cost effective alternative to nursing home placement of such elderly. However, due to severe budget constraints many states have chosen to cap the monthly growth in the all inclusive care options to a net of two participants a month. This creates an uncertainty in the availability of projected open enrollment slots each month. Gross enrollment slots open are the two growth slots and the slots available due to a participant death in the previous month. This research attempts to study factors that may affect enrollee deaths in a month. This could help provide a more accurate projection of the enrollment slots that would become available to the elderly seeking enrollment each enrollment period. We believe that standard life expectancy statistic should not be used because enrollees in the all inclusive care options tend to require higher level of medical care possibly resulting in lower life expectancies than the norm. This research investigated whether enrollee gender, age and length of stay in the all inclusive care option affect the expected death rate. Data was obtained for sixty five enrollees participating in the all inclusive care option in a southern state in United States. Analysis showed that the life expectancy for the enrollees in the all inclusive care option was no different from the national average which included enrollees and non-enrollees. The factor enrollee gender was also examined to test the generally accepted idea that women have longer life expectancies than men. This was done to determine if availability should be assessed with consideration to additional life expectancy of females compared to males. No significant difference was found between the average ages at death between men and women receiving the all inclusive care. Finally, the length of participation in the all inclusive care option was also not found to affect the age of death. Thus, national averages for life expectancies could be used to predict availability of open slots for elderly wishing to enroll in the all inclusive care option.

Introduction

Options of comprehensive all-inclusive care of the Elderly began in the early 1970's in the Chinatown-North Beach community of San Francisco where the needs of families whose elders had migrated from Italy, China and the Philippines required long term care. Due to the cultural preference of these communities, there was a strong desire to develop a community based alternative to the traditional nursing home care available. Local physicians and community leaders worked together to form a nonprofit corporation, On Lok Senior Health Services, to create a community based system of care. On Lok, which means "peaceful, happy abode" in Cantonese, started by providing an adult day health center which allowed the caregivers of it's participants to work during the day while providing care in their homes at night. Over time, it added additional components such as an onsite clinic and home health services through demonstration grants and initiatives until it and twenty-one other initiatives who replicated the model became permanently recognized providers in 1997 under the Balanced Budget Act of 1997. This act established such options as a new provider type under Medicare and Medicaid, (NPA, 2014).

Since 1997 comprehensive care options have grown to one hundred and three sites in thirty-one states. Due to its status as a Medicare and Medicaid provider, new programs must have the support of the Centers for Medicare and Medicaid Services (CMS) as well as its State's Department of Health and Hospitals (DHH). While CMS readily approves new programs since they are considered Medicare Advantage programs; each state is a new challenge due to Medicaid budgets and the new Program's ability to prove its viability and cost savings within its state.

Comprehensive care option programs act as a patient-centered medical home with the program receiving capitated payments from Medicare and Medicaid for the total care of the participants they serve. In effect these programs are small provider based insurance companies, and are at full risk for the cost of the services they provide. The participants must be fifty-five or older and meet nursing home level of care requirements for the state in which they reside. The program

Interdisciplinary team consists of a physician, registered nurse, occupational therapist, physical therapist, licensed clinical social worker, home care coordinator, program center director,

transportation coordinator, recreational therapist, nutritionist, and certified nursing assistant.

These disciplines assess the participant and develop a comprehensive care plan that fully outlines the participant's needs and interventions to insure complete care of the physical and psychosocial needs. In addition, quality indicators including immunization rates and readmissions are reported to CMS quarterly for review and discussion.

More on Comprehensive Care Options

While comprehensive care option programs are not currently affected by changes related to the Affordable Care Act of 2010 (ACA), the national conversation has shed light on the fact that they could be a viable model for the long term solutions to healthcare it seeks to establish. For decades through this model, the elderly have been receiving the exact care that the Affordable Care Act seeks to achieve for all Americans. Unfortunately in the current environment of accountable care and patient-centered medical homes that the ACA supports, these programs are struggling to continue to expand its services due to the limits established by current regulation. Through some regulatory changes these programs can be adapted to provide coverage to additional demographic groups in a cost effective and clinically sound way (Bloom, 2011).

Under the current structure, comprehensive care option programs in many states provide personal care and supportive services, transportation, Adult Day Health Care, Nursing Facility Care, respite care and caregiver education, assistive devices, social work services, recreation therapy and any other care needed to maintain overall health (DHH, 2014). The Medicaid reimbursement cost of these services is determined as a blended rate of nursing home and community based services provided by other programs through the State's Department of Health and Hospitals. States are required to participate and provide resources if federal funding is desired. These programs are well accepted by some. A participant's family said it did the impossible for my mother, I never thought she could live with us again. Virginia governor signed into law a legislation that allows for faster enrollment into such programs. Legislation addresses issues in the clinical eligibility determination process of the desiring participants.

Due to last recession and state budget constraints, some states have capped the growth of enrollees in such programs. For example, the cap in one of the southern states has been set to two net participants per period. This creates a unique enrollment challenge due to uncertainty of projecting total gross enrollment slots available each period. Gross enrollment slots are two growth slots plus any slots available due to enrollee deaths during the previous period.

Methodology and Research Objective

Thus, the objective of this research was to determine what factors affect availability of enrollment slots in such programs for the elderly care. Clearly, the number of slots available will be tied to the number of enrollee deaths in the previous period. Therefore, a model needs to be developed to predict expected number of enrollee deaths in a period. This could help develop a reliable projection of available enrollment slots for the desiring participants in the upcoming period.

We suspect that “Enrollee’s Age at Death” would be related to “Enrollee Gender.” We suspect that “Enrollee’s Age at Death” would also be related to “Enrollee’s current Age.” In addition we suspect that “Enrollee’s Age at Death” would be related to “Enrollee Length of Stay in the program.” Thus, we suspect that Factors (1) Enrollee Gender, (2) Enrollee Age and (3) Enrollee Length of Stay could affect the number of deaths and thus the availability. In reference to variable Age, we believe standard life expectancies should not be used for prediction because comprehensive care enrollees tend to require higher level of medical care and nursing care. We suspect that they will likely have lower life expectancy and span compared to the norm.

To confirm, the following hypothesis were tested in the study.

Null Hypothesis 1: The average Age at death for comprehensive care enrollees is lower than the average Age at death for the general population.

Null Hypothesis 2: The average Age at death for comprehensive care female enrollees is higher than that for the comprehensive care male enrollees.

Null Hypothesis 3: The average Age at death for comprehensive care enrollees is independent of the enrollee’s length of stay in the comprehensive care program.

A random sample of sixty five enrollees was obtained from the current pool of participants enrolled in comprehensive care program at a site in a southern state. Since, the minimum age to join comprehensive care program is 55, the life expectancy for general population taken from the CDC Table for comparison was that for the 55 year age group of males and females rather than from birth.

Data was collected on Gender of enrollee, Length of Stay or years receiving comprehensive care and Age at death.

Results

The demographic characteristics of the sample showed that the sample included 45 females and 20 females. Nationally, the average Age at death for females 55 years and older was = 82.58 years. Nationally, the average Age at death for males 55 years and older was = 79.80 years. For the State used in the study, the average Age at death for females 55 years and older was = 81.23 years. For the State, the average Age at death for males 55 years and older was = 77.01 years.

A “t-test” showed no significant difference between Average Age at death between general female senior population (55 and older) and Average Age at death for female enrollees in the comprehensive care program ($p > .10$). Similarly, the “t-test” showed no significant difference between Average Age at death between general male senior population (55 and older) and Average Age at death for male enrollees in the comprehensive care program ($p > .10$). The analysis also showed that there was no significant difference between the ages at death between men and women enrolled receiving the comprehensive care. This was an unexpected finding as it contradicts the generally accepted theory and CDC life expectancy tables that do show a longer life expectancy for women than men. Finally, a Chi Square Test of Independence showed that the factors Age at death and Length of stay were not dependent ($p > .10$).

Conclusions

From the results, it can be concluded that there is no significant difference in the life expectancy of a person receiving comprehensive care from these programs compared to persons who are not receiving the care regardless of gender or length of stay or length of enrollment in the program. These findings are somewhat unexpected. One could say that comprehensive care from such programs does bring the life expectancy of the enrollees to the national level but does not increase it any more. One must be mindful that the benefits of such care are psychological to the elderly and also may bring relief to the

family. On the other hand, medical benefit of such care may be questioned by some relative to the cost of such care when pressures to bring down medical care costs are mounting every year.

Finally, based on the findings, we can say that separate prediction model to predict availability for such comprehensive care is not needed. Standard life expectancy rates could be used.

The limitation of the study of the study is that the sample and the data came from an unhealthy southern State characterized by high prevalence of smoking, high prevalence of obesity and physical inactivity, and, high percentage of seniors living in poverty. On the positive note, the state did have high prevalence of Flu vaccinations, good availability of home health workers and reported low prevalence of falls.

References

Bloom, Shawn. "Accountable Care Strategy" *Healthcare Executive Insight*. 2011.

DHH. "DHH Website" 2014.

NPA website. "Policy Changes to Support Expansion, Flexibility and Access" Retrieved Online April 2014 from www.npaonline.org, 2014.

The Influence of Cultural Intelligence on Intercultural Business Negotiation

By

Steve A Varela

International School of Management

ABSTRACT

The persistent growth of international trade continues while a rebalancing of global economic activity occurs. Eastern market challengers have shifted the world economy into their favor along with the corresponding benefits of power and influence that are typically associated with developed world economies. Consequently, the needs for more efficient negotiation outcomes take center stage as an ever-increasing level of trading activity navigates the world economy.

This research examines the relationships between the four dimensions of the Cultural Intelligence construct with intercultural business negotiation outcomes. Metacognitive cultural intelligence, cognitive cultural intelligence, motivational cultural intelligence, and behavioral cultural intelligence sub-dimensions and their relationships to intercultural negotiation planning, outcomes, satisfaction, and performance-satisfaction are examined.

To test the hypotheses, the Cultural Intelligence Scale (Ang & Van Dyne, 2008) was administered to 102 experienced international negotiators from members of the Taiwan External Trade Development Council, based in Taipei, Taiwan along with a self-report survey of the results of actual intercultural negotiation exchanges. A cross-sectional research method incorporated a sequential survey design and subsequent analysis was conducted using correlation and hierarchical regression analysis. Results indicated that three of the four hypotheses were supported. Specifically, the results provided support that aggregate cultural intelligence predicts intercultural negotiation outcomes, intercultural negotiation satisfaction, and intercultural negotiation performance-satisfaction. Evidence also suggests that two sub-dimensions, motivational cultural intelligence and behavioral cultural intelligence predict inter-cultural negotiation performance-satisfaction.

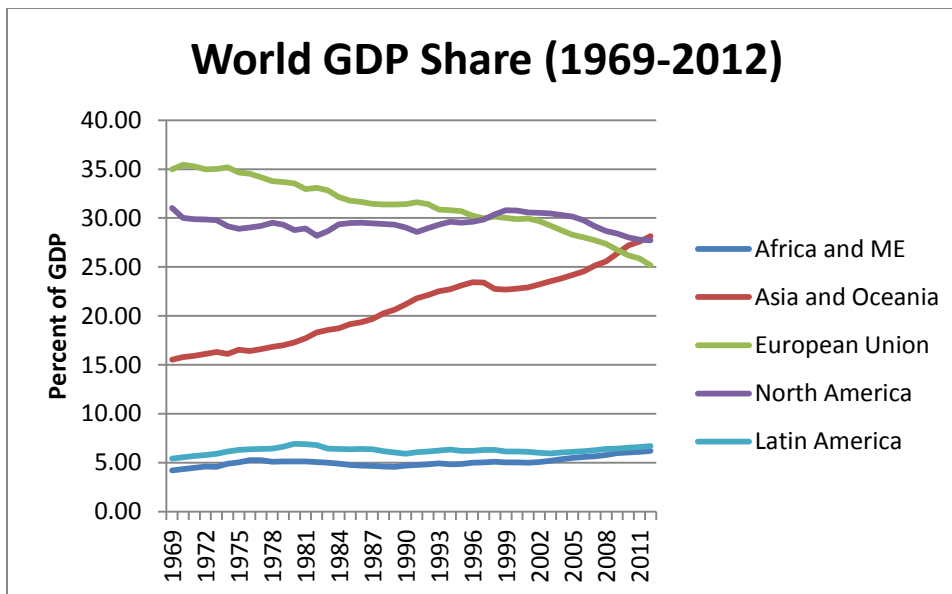
Together, the findings suggest that the cultural intelligence scale can be relied upon to predict the outcomes of intercultural negotiation outcomes as well as be utilized to select and train managers for intercultural negotiation assignments.

Introduction

The need for effective intercultural negotiation expertise has never been greater. To be sure, the once comfortable era of entering international markets as an option has quickly eroded into a business imperative. Once stable markets controlled by large entities from developed, free-market economies are now open territory for unknown upstarts due in part to technological, political, and economic advances. As a result, upstarts from historically closed markets are now entering the global arena with the depth, technology, and sophisticated resources that these advancements have provided. In short, an improved understanding of intercultural negotiation efficacy is becoming increasingly important as the global economy gradually shifts towards Asia.

Recent data from the United States Economic Research Service has demonstrated that the increase in Asian gross domestic product (GDP) as a percentage of World GDP has risen from about 15% in 1969 to 28% at the end of 2012, surpassing the economies of both North America and the European Union. During 2010, the Asian GDP surpassed the GDP of the European Union, and it similarly surpassed the North American GDP during 2012. Indeed, the global power structure has changed in many ways (United States Department of Agriculture, 2012).

Figure 2: World GDP Share (1969-2012)



Relatively little empirical research has been conducted on negotiation outcomes during actual negotiations or under controlled simulations with experienced international negotiators, perhaps due to logistical issues or the lack of willing participants (Imai & Gelfand, 2009; Gelfand & Christakopoulou, 1999). The majority of research that is available represents a large body of work that mainly focuses on

comparing one cultural style with another (Salacuse, 1988). Essentially, large amounts of independent data are available, but not in a form which facilitates the use of such information to build effective intercultural negotiation competencies.

Efficient negotiations that create value are essential for both the individual negotiating parties involved and the global economy alike. While precise figures are difficult to find, data from a negotiation study by Nadler, Thompson and van Boven (2003) suggests that the classic “win-win” or integrative negotiation outcome is attained only about three percent of the time, and that the rate of success in reaching simple agreements is less than 50 percent. As mentioned above, intercultural negotiations face an additional degree of difficulty owing to numerous differences such as language and communication, context, perception, styles, expectations, and values. As a result, scholars cite evidence that newly formed international joint ventures that rely heavily on integrative negotiation expertise have notorious failure rates (Luo & Shenkar, 2002).

Despite the benefit of large volumes of data gathered at the particular national or cultural level, today’s business reality dictates that many international business executives traverse the globe seeking solutions to opportunities from a host of cultures, often simultaneously. Unfortunately, it is not possible for an individual negotiator to master the multitude of intercultural negotiation nuances required by today’s interconnected world.

One intelligence construct based on specific cognitive and behavioral dimensions of culture that researchers have recently developed is the cultural intelligence model (Earley & Ang, 2003). Similar to other domain based intelligence models such as emotional intelligence or social intelligence that complement our cognitive ability, the cultural intelligence scale is a four dimensional construct based on a growing body of research emanating from original works by Schmidt and Hunter (1996) and Sternberg and Detterman (1986) whose research suggests that real-world intelligence and associated outcomes extend to competencies beyond mere cognitive capability.

The cultural intelligence model (CQ) asserts that intelligence is a construct that incorporates not only what we know (cognitive CQ), but also the processes involved in how we plan and implement our strategy for acquiring new cultural knowledge (metacognitive CQ). The construct additionally includes a component for what motivates us to expend energy and time towards acquiring new knowledge (motivational CQ) as well as a construct for assessing how well we use that knowledge in culturally diverse settings (behavioral CQ). In sum, the multi-dimensional structure of CQ addresses the claims of many scholars and practitioners who recognize that individuals with high levels of cognitive ability do not always achieve similar levels of success with respect to their preferred outcomes (Sternberg, 1999).

The remainder of this paper considers relevant theoretical and empirical findings to buttress the hypotheses relative to cultural intelligence and intercultural exchange outcomes. The next sections present the conceptual framework and research methodology along with a description of the findings. I then conclude with a discussion of the results and note implications for further research and practice.

Cultural Intelligence

Cultural Intelligence, as an individual difference, is grounded in the intelligence literature based on its state-like capability properties, particularly those with malleable features. The conceptualizers of cultural intelligence view the construct as a “specific individual difference construct because it focuses on

culturally relevant capabilities” (Ang & Van Dyne, 2008, p. 8). They do not consider the construct overly expansive such as individual difference measures like cognitive ability or personality. However, they do consider it sufficiently *culturally broad* in the sense that it does represent the individual ability to function across many cultures rather than an ability to function within individual cultural matchups such as China and Brazil.

From an intelligence perspective, cultural intelligence is both similar to and distinct from other forms of intelligence such as general mental ability or emotional intelligence. It is similar to general mental ability and emotional intelligence because it is a predictor of abilities rather than preferences, but it is different from general mental ability because general mental ability represents the ability to perform across all contexts but not granular enough to predict specific performance in intercultural contexts (Ang & Van Dyne, 2008). It is also different from emotional intelligence for the reason that while emotional intelligence represents the ability to identify and control emotions, there is no evidence that it is transferrable across cultures (e.g. etc), which commonly express emotions in substantially different forms (Law, Wong, & Song, 2004). Consequently, while cultural intelligence is a culture free construct, emotional intelligence is more culture bound since the appropriate display of emotions are heavily influenced by culture specific expectations and behaviors.

The Cultural Intelligence Scale

The Cultural Intelligence Scale (Ang, et al., 2007) is a focused, meaningful, and robust construct owing to more than six original development and refinement studies that have validated that the results: (1) are generalizable across samples, (2) across time, (3) across countries, and (4) across methods, namely self-report and observer report. Cultural intelligence research was motivated by two important realities: the growing number of people involved in “real-world” multicultural activities brought about by globalization, and the lack of theory that explores the predictability of individuals performing in multicultural environments.

As noted above, cultural intelligence is a multi-dimensional construct that incorporates both behavioral and cognitive facets.

Metacognition is the process of how we strategically accumulate and enhance our knowledge (Flavell, 1979). From an inter-cultural perspective, Metacognitive cultural intelligence (MetCQ) refers to our conscious awareness of differences in intercultural interactions. Individuals with high levels of metacognitive cultural intelligence consistently question and adjust their own cultural understanding, often in real-time, when interacting with others from another culture. Metacognitive cultural intelligence incorporates higher-level cognitive reasoning that permits us to develop new mental modes of understanding social interaction in new environments.

The significance of metacognitive cultural intelligence is that it challenges the individual to think actively about their existing cultural conventions and to continuously question previous assumptions in such a way that the individual can increase their understanding and behavior. These metacognitive events occur throughout the process as individuals plan for, monitor, and update their intercultural mental models (Brislin, Worthley, & MacNab, 2006).

Cognitive cultural intelligence (CogCQ) focuses on an individual’s knowledge bank of cultural norms, practices, context, and conventions, which frequently stem from culture specific value systems (Ang &

Van Dyne, 2008; Early, Ang, & Tan, 2006). Cognitive cultural intelligence also indicates an individual's understanding of their own self-concept compared to others and an understanding of the existence of both broad cultural universals and cultural differences. This expanded knowledge base makes for greater predictability in social interaction, increased attribution accuracy, and at the end of the day, more effective intercultural behaviors (Thomas, 2006).

Increasing cognitive level cultural knowledge has traditionally been the focus of inter-cultural training and executive education programs for multinational corporations, government agencies, and non-profit organizations. Examples of cultural understanding includes knowledge of systems that facilitate the movement of goods and services (e.g. stores of value, economic exchange), various patterns of social interaction (e.g. family, business, government), child rearing practices (e.g. maternal, paternal hierarchy), beliefs and values that relate humans to the greater universe (e.g. religion, ethics); and educational systems, legal systems, ceremony and other systems that provide for the basic physiological needs of a society (Triandis, 2006).

Motivational cultural intelligence (MotCQ) refers to the level of interest and energy we devote to the enhancement of our cultural knowledge and performance. It is conceptualized as one's intrinsic desire to engage in inter-cultural exchanges based in part on one's self-growth objectives (Templer, Tay, & Chandrasekar, 2006). According to the expectancy value theory of motivation, the key to increasing an individual's motivation is one's expectations for successful outcomes and the expectations of increased value in exchange for such effort (Robbins & Judge, 2009; Wigfield & Eccles, 2000). Therefore, motivational cultural intelligence contemplates an individual's values, self-efficacy, and goal setting expectations.

Behavioral cultural intelligence (BehCQ) is a non-cognitive dimension of cultural intelligence and reflects an individual's ability to behave or act appropriately in culturally diverse situations through the exhibition of appropriate verbal and/or non-verbal actions (Ang, et al., 2007). According to Hall (1959), an individual's mental faculties are not sufficient alone to bring forth success. Hall asserts that an individual must utilize their mental (e.g. metacognitive, cognitive) and non-mental (e.g. motivational, behavioral) capabilities in order to reach their goals. Utilizing one's knowledge and motivation as well as possessing the capability to adapt their behavior to exhibit proper responses during intercultural interactions contributes positively to intercultural outcomes (Koneya & Barbour, 1976; Ang, Van Dyne, & Tan, 2011).

Of all the dimensions of cultural intelligence, behavioral cultural intelligence is arguably the most difficult dimension to acquire (Early, Ang, & Tan, 2006). For instance, there are many actions that we aspire to achieve but cannot actually perform since many behavioral actions require refinement and finesse.

Empirical research has demonstrated the validity of cultural intelligence as a predictor of intercultural exchange outcomes in a number of cross cultural business situations. For example, Chua et. al (2012) found that managers who scored high in metacognitive cultural intelligence were more likely to share new ideas resulting in improved problem solving outcomes when involved in intercultural exchanges. Furthermore, Ang et al. (2007) found that individuals with higher aggregate cultural intelligence were more accurate in their decision making above and beyond cognitive ability, emotional intelligence, personality, and international experience. In negotiation, Wilken et al. (2013) found that the use cultural

moderators, who were natively familiar with both cultures, produced negotiation outcomes of higher value when engaged in distributive negotiation exchanges. Finally, Imai and Gelfand (2010) found that the use of reciprocal negotiation sequences, known to produce negotiation outcomes of higher value, were more prevalent for negotiators who enjoyed higher levels of cultural intelligence than negotiators with lower levels of cultural intelligence.

Hypothesis Development, Research Design, Methods, and Instrumentation

The following research hypotheses, derived from the theoretical basis above, suggest that the use of the cultural intelligence scale is a valid measure to predict the outcomes of intercultural negotiations. As such, the following four hypotheses are examined.

H1: Intercultural Negotiation Outcome (ICNO)

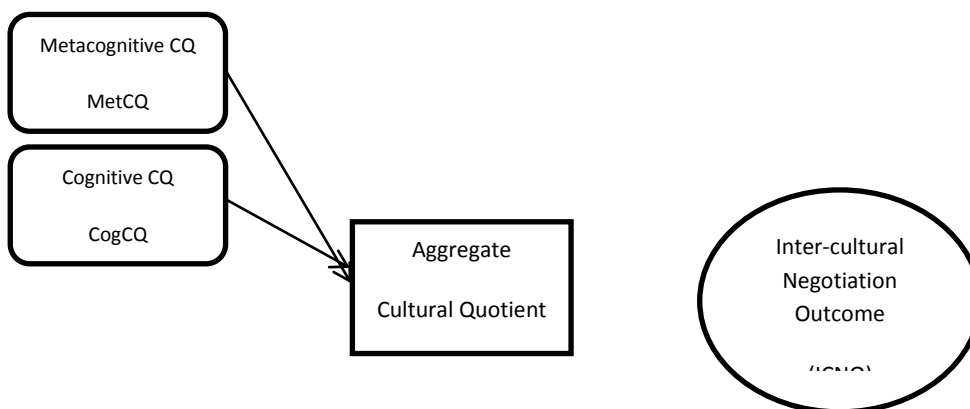
Intercultural Negotiation Outcome (ICNO) represents the utility outputs of inter-cultural negotiations and is hypothesized to be positively influenced by aggregate form of cultural intelligence, aggregate cultural intelligence (CQ).

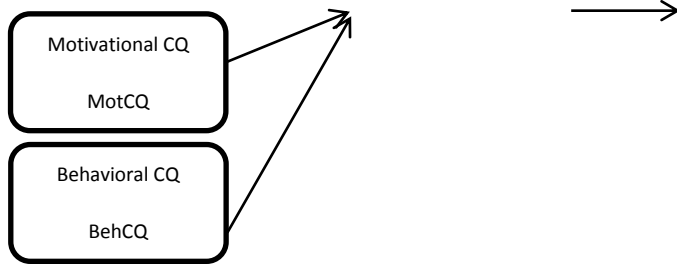
There has been consistent agreement among scholars that the results of inter-cultural negotiation outcomes are suboptimal as compared to intra-cultural negotiation outcomes (Graham, 1985; Imai & Gelfand, 2010; Adair, Brett, & Okumura, 2001; Adler & Graham, 1989) and that research into the behavioral and psychological influences of negotiation outcomes has been inadequate (Malhotra & Bazerman, 2008; Chung & Ingleby, 2011). Since Lewicki, et al. (2010) assert that effective planning and strategy are the most important factors to achieving negotiation objectives, and Thompson (2009) asserts that a majority of the negotiation effort should be dedicated to planning, metacognitive cultural intelligence and cognitive cultural intelligence are jointly hypothesized to be positively related to intercultural negotiation outcomes. Further, since a majority of researchers agree that motivation is positively related to task performance (DeDreu, Weingart, & Kwon, 2000; Ang, et al., 2007), metacognitive cultural intelligence is hypothesized to be positively related to intercultural negotiation outcome. Moreover, since successful intercultural outcomes require the ability to display culturally appropriate behaviors (Ang, et al., 2007), and effectively adapt their behaviors to the situation (Earley & Ang, 2003), or shape the situation to maximize the exchange (Thomas, 2006), behavioral cultural intelligence is also hypothesized to be positively related to intercultural negotiation outcome.

Therefore, it is hypothesized that aggregate CQ including MetCQ, CogCQ, MotCQ, and BehCQ are positively related to ICNO, accordingly:

H1: Negotiators with higher levels of aggregate CQ will have higher levels of ICNO than negotiators with lower levels of aggregate CQ.

Figure 3: Schematic of H1 (Intercultural Negotiation Outcome)





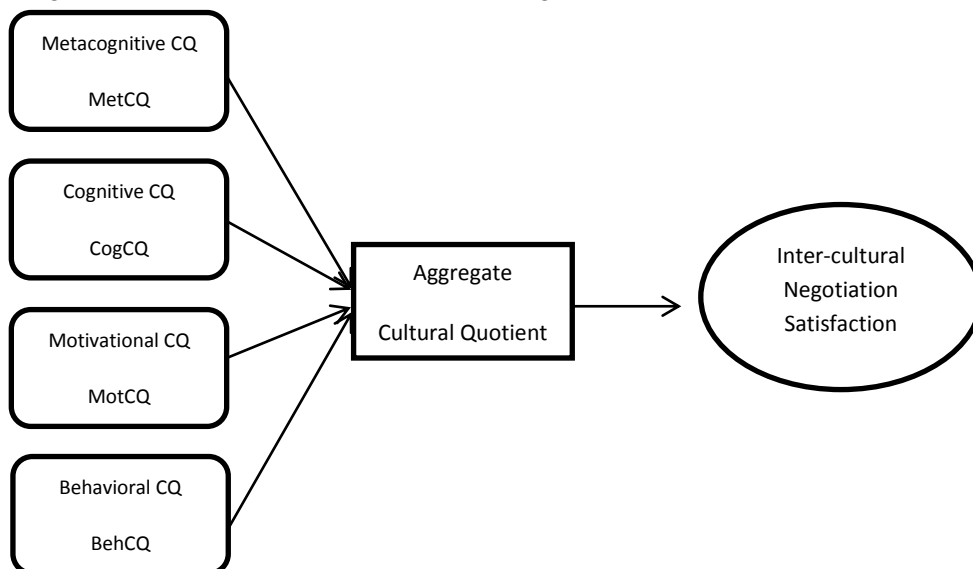
H2: Intercultural Negotiation Satisfaction (ICNS)

To further gauge the outcomes of inter-cultural negotiations, without measurement constructs that may suffer from certain culture or response bias, a culture free construct, Intercultural Negotiation Satisfaction is utilized (ICNS). The satisfaction outcomes of specific intercultural negotiations are influenced by the perceptions and expectations of individual negotiators based on their underlying goals (Robbins & Judge, 2009) and the cultural values of negotiators themselves (Morris & Gelfand, 2004; Simintiras & Thomas, 1997). Moreover, the measurements of specific inter-cultural negotiation results are complex because negotiator outcomes can vary widely in terms of financial benefits, inter-party relationship status, and external constituencies, among others. In addition, it is reasonable to expect that negotiation satisfaction measures are often the only authentic feedback a negotiator has for their performance, particularly in the case of real-world negotiations as compared to laboratory simulations (Curhan, Elfenbein, & Xu, 2006). This is due to the reality that negotiators largely do not know the value of the actual outcome to their negotiating opponent, they do not know the opponent's alternatives, nor do they know with any certainty what the opponent would have accepted for their particular exchange or indeed, what they have historically accepted for similar exchanges. Finally, reliable measurements of actual negotiation outcomes are difficult to obtain owing to the reluctance of real-world participants to reveal sensitive data (Graham, 1985; Adler & Graham, 1989). Given the above, negotiation satisfaction is used as a culture and response bias-free proxy for negotiation outcomes.

As in the construct for hypothesis 2 relative to intercultural negotiation outcomes, intercultural negotiation satisfaction is hypothesized to be positively influenced by the aggregate form of cultural intelligence, CQ. Accordingly,

H₂: Negotiators with higher levels of aggregate CQ including MetCQ, CogCQ, MotCQ and BehCQ will have higher levels of ICNS than individuals with lower levels of aggregate CQ.

Figure 4: Schematic of H2 (Intercultural Negotiation Satisfaction)



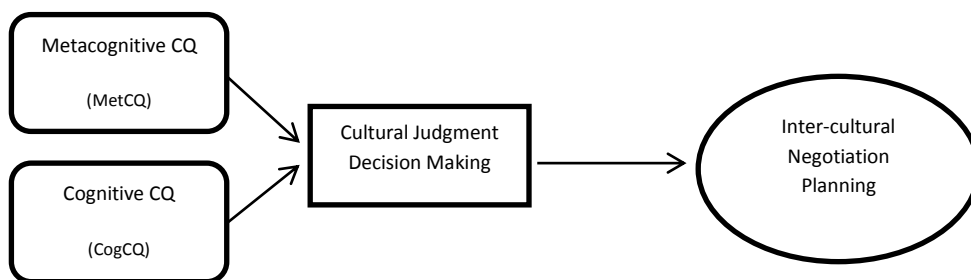
H3: Inter-cultural Negotiation Planning (ICNP)

As many negotiation scholars and practitioners have agreed, adherence to a systematic process including goal setting, planning, and strategic execution leads to more successful negotiation outcomes (Halpert, Stuhlmacher, Crenshaw, Licher, & Bortel, 2010; Lewicki, Barry, & Saunders, 2010). This is also presumed to be true for intercultural negotiation exchanges (Benoliel, 2011; Thompson, 2009), particularly those of an integrative nature (Adair W. , 2003; Weingart & Olekalns, 2004). Hence, intercultural negotiation planning represents the level of planning that intercultural negotiators engage in prior to the negotiation exchange.

Consistent with Ang, et al., (2007) relative to cultural judgment and decision-making (CJDM) on human information processing, this hypothesis considers the relationship between metacognitive cultural intelligence (MetCQ) and cognitive cultural intelligence (CogCQ) to be positively related to intercultural negotiation planning (ICNP). Metacognitive cultural intelligence contributes to negotiation planning since its processes involve maintaining heightened awareness of, and attention to, the intercultural exchange including awareness of the assumptions, emotions, motivations, intentions, behaviors, and skills of oneself and those of culturally different others (Thomas, 2006). The metacognitive cultural intelligence component of cultural intelligence reflects an individual’s “control of cognition” or strategic approach to task elements such as planning, monitoring, and adaptive, real-time selection and use of various cultural exchange strategies. The cognitive cultural intelligence component of cultural intelligence reflects the individual’s repertoire of existing cultural knowledge structures such as knowledge of norms, accepted practices, cultural artifacts, and conventions used in a variety of cultures (Ang & Van Dyne, 2008). Cognitive cultural intelligence forms the basis for comprehending and decoding the behavior of others and ourselves. This declarative knowledge allows a better grasp of the internal logic and modal behavior of another culture, which can serve as an initial estimation relative to the behavior of a culturally distinct negotiating counterparty (Thomas, 2006). Since both sub-dimensions of cultural intelligence are mental capabilities that require: (a) active thinking about people and their cultures, (b) culture-specific declarative knowledge in order to understand cultural universals and cultural particulars, and (c) the ability to consider and evaluate factors related to both context and goals, individuals who score high in both sub-dimensions will have a clearer sense of direction on how to proceed during inter-cultural negotiations (Lewicki, Barry, & Saunders, 2010). Therefore, it is hypothesized that:

H3: Negotiators with higher MetCQ and CogCQ will exhibit higher ICNP than individuals with lower MetCQ and CogCQ.

Figure 5: Schematic of H3 (Intercultural Negotiation Planning)



H4: Intercultural Negotiation Performance-Satisfaction (ICNPS)

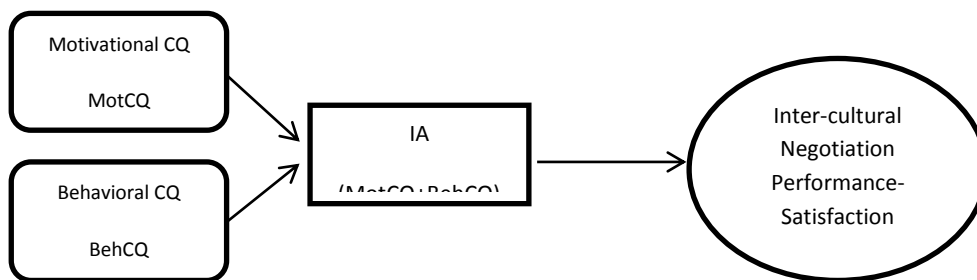
Inter-cultural Negotiation Performance Satisfaction (ICNPS) has been constructed to examine the specific relationship between cultural intelligence sub-dimensions motivational culture intelligence (MotCQ) and behavioral cultural intelligence (BehCQ) to negotiator performance satisfaction (ICNPS). The premise is consistent with determinants of task performance; namely, that task performance is the product of ability and motivation (Whetton, 2011).

According to social cognitive theory, highly motivated individuals exhibit higher levels of interest and persist in their efforts (Bandura, *Social Cognitive Theory: An Agentic Perspective*, 2001). Since individuals with higher levels of motivational cultural intelligence are by definition expected to have an intrinsic interest in cross-cultural exchanges and an enhanced drive to persist, motivational cultural intelligence is projected to be positively related to intercultural negotiation performance-satisfaction (Earley & Ang, 2003). As an example, individuals with higher levels of energy and persistence tend to practice new behaviors and, through experience, increase their performance outcomes (Ang, et al., 2007). Furthermore, since the appropriate ability to demonstrate cross-cultural behaviors also relates positively to task performance, behavioral cultural intelligence should also be positively related to intercultural negotiation performance-satisfaction. To illustrate, a study of expatriate outcomes demonstrated that behavioral flexibility was positively related to inter-cultural task performance (Shaffer, Ferzandi, Harrison, Gregersen, & Black, 2006). Finally, there is substantial empirical evidence that demonstrates a strong positive link between job satisfaction and task performance (Judge, Thoresen, Bono, & Patton, 2001); hence, individuals who exhibit higher levels of job performance should also enjoy higher levels of job performance-satisfaction.

Therefore, it is hypothesized that motivational cultural intelligence and behavioral cultural intelligence are positively related to intercultural negotiation performance-satisfaction, accordingly:

H4: Negotiators with higher levels of MotCQ and BehCQ will have higher levels of ICNPS than negotiators with lower levels of MotCQ and BehCQ.

Figure 6: Schematic of H4 (Intercultural Negotiation Performance-Satisfaction)



Sample, Research Design, Methods, and Instrumentation

The Taiwan External Trade Development Council (TAITRA) was chosen as the study site due to the success of its members in international trade implementation and the contributions it has made to the dynamic business economy that earned Taiwan the distinction of “Asian Tiger” (Kim, 1998). TAITRA is the foremost non-profit trade organization in Taiwan sponsored in part by the Taiwan government, several industry associations, and commercial and educational entities based in Taipei, however, its expertise is spread globally via a network of 600 trade specialists operating in 48 countries. By many standards, TAITRA offers a rare, yet ideal site based on access to experienced international business negotiators that have operated in a dynamic market for a substantial period of time.

Sampling Method and Participants

The study sample was based on a purposive selection method strategy. Purposive sampling is known for being an efficient method to obtain meaningful responses from participants who are in the best position to provide informed answers, which for the purposes of this study are experienced international businesspersons (Sekaran, 2000).

Through the association with TAITRA, participants were identified and pre-qualified based on two criteria: (a) a minimum of one year of international business experience, and (b) one year of membership in the TAITRA organization. In exchange for their participation, respondents were offered a personalized analysis of their own cultural quotient and a summary of results of the overall study.

In the TAITRA experienced negotiator sample, there were 102 responses. Forty-six percent of the population was female with all but one of the respondents reporting Taiwanese citizenship; the other reported being a citizen of the People’s Republic of China. The average age of the population was 36.04 years. The participants had an average of 10.84 years of work experience and an average of 5.14 years of negotiation experience.

Instrument & Testing

A three-part, bi-lingual (English – Traditional Chinese) survey containing: (1) the four factor cultural intelligence scale measurements, (2) negotiation outcomes, and (3) demographic information was developed to examine the influence of cultural intelligence on intercultural negotiation outcomes.

Part I of the survey contained a bi-lingual version of the original 20-item Four Factor Cultural Intelligence Scale developed by Ang, et al. (2007). Since the scale was only available in English and Simplified Chinese, the scale was backward translated into traditional Chinese by faculty and staff experienced in translation at Tunghai University.

The Four Factor Cultural Quotient Scale developed by Van Dyne and Ang corresponds with each of the four sub-dimensions of the cultural intelligence construct: metacognitive cultural intelligence, cognitive cultural intelligence, motivational cultural intelligence, and behavioral cultural intelligence, and consists of 20 self-report items on a seven point Likert type scale. It was tested and validated across multiple samples, methods, and longitudinally with N=1,759 respondents (Van Dyne, Ang, & Koh, 2008).

Part II of the survey included the measures for evaluating inter-cultural negotiation outcomes: intercultural negotiation planning, intercultural negotiation outcomes, intercultural negotiation satisfaction, and intercultural negotiation performance-satisfaction.

Intercultural negotiation planning measurements were based on measures from original work by Schneider at the Harvard Negotiation Law Review (Schneider, 2002). The items that measured planning included: (a) "How much time do you spend on negotiation planning?", (b) "Did you prepare a written plan in advance of your negotiation interaction?", (c) "Did you identify your negotiation goals in advance of your negotiation interaction?", and (d) "Did you identify your alternatives in advance of your negotiation interaction?".

Items that measured inter-cultural negotiation outcomes focused on satisfaction measures related to individual negotiation expectation outcomes, individual negotiation performance outcomes, and individual negotiation economic outcomes. Satisfaction measurements, recognized as a proxy for measuring negotiation outcomes which are difficult to measure owing to broad variance (Gelfand & Brett, 2004) or where self-report reluctance factors are prone to influence, were adopted from Graham, Mintu, and Rogers (1994) and were based partially on cross-cultural sales research by Graham (1985) and subjective value research by Curhan (2006). These included: (a) "If an agreement was reached, how satisfied were you with that agreement?", (b) "How satisfied were you with the agreement relative to your pre-negotiation expectations?", (c) "How satisfied were you with your negotiation performance?", and (d) "How satisfied were you with your individual gains (e.g. discount, margin, risk, terms, etc.)?".

Part III of the survey instrument included demographic information such as the respondent's age, gender, education level, years of professional experience, and years of negotiation experience. Contextual information was also collected that included the year that the reported negotiation occurred, the industry, and the country of the counter-party in addition to optional contact information for respondents interested in obtaining their personalized cultural intelligence report and the results of the survey

Testing

Since the three survey parts were all translated from English, pilot testing was necessary to identify potential translation errors. This was conducted twice, initially under controlled conditions with experienced professionals (N=7) participating in an EMBA program in the Department of International Trade and subsequently with international business graduate students. Recognizing that the target population was composed of experienced international business negotiators with varying and oftentimes relatively robust levels of English fluency, the researcher decided to implement a bi-lingual version of the survey as opposed to either an English only or Traditional Chinese only language version. Respondents were consequently presented with each of the survey item questions in both Traditional Chinese and American English on the same item response line in an attempt to further increase overall item comprehension.

Testing on the final bilingual survey was accomplished with volunteer graduate students (N=21) and none reported having any difficulty with survey item comprehension.

Research Variables

Tables 1 -3 present the variables collected in the three-part survey administered to the TAITRA sample that included the following independent, derived, dependent, and demographic variables.

Table 17: Independent Variables

Variable	Measurement
METCQ Metacognitive CQ	MetCQ is the process of how we strategically accumulate and enhance our knowledge (Flavell, 1979; Ang, et al., 2007)
COGCQ Cognitive CQ	CogCQ focuses on an individual's knowledge bank of cultural norms, practices, context, and conventions, which frequently stem from culture specific value systems (Early, Ang, & Tan, 2006; Ang, et al., 2007).
MOTCQ Motivational CQ	MotCQ refers to the level of interest and energy we devote to the enhancement of our cultural knowledge and behavior. It is conceptualized as ones intrinsic desire to engage in inter-cultural exchanges based in part on ones self-growth objectives (Templer, Tay, & Chandrasekar, 2006; Ang, et al., 2007)
BEHCQ Behavioral CQ	BehCQ reflects an individual's ability to behave or act appropriately in culturally diverse situations through verbal or non-verbal actions (Ang, et al., 2007)

Table 18: Derived Variables

Variable	Definition
Final_CQ (MetCQ+CogCQ+MotCQ+Beh CQ)	Aggregate Cultural Intelligence Score (Ang, et al., 2007). Calculated as the average of all four sub-dimensions.
CJDM (MetCQ + CogCQ)	Cultural Adjustment and Decision Making. Refers broadly to human information processes for making decisions in culturally diverse settings. CJDM tasks require deliberate reasoning, evaluation of evidence, and a rational comparison of alternatives. CJDM is limited to mental capabilities and is not expected to predict inter-cultural motivational or behavioral outcomes, consequently it is limited to the two cognitively focused sub-dimensions of cultural intelligence: metacognitive and cognitive (Ang & Van Dyne, 2008; Early, Ang, & Tan, 2006). Calculated as the average of the two sub-dimensions.
IA (MotCQ + BehCQ)	Interactional Adjustment. Refers to an individual's ability to relate and adapt to culturally diverse others in both work and non-work situations characterized by cultural diversity. IA tasks rely on an individual's intrinsic motivation and expanded behavioral repertoire for success. IA skills include the two non-mental sub-dimensions of cultural intelligence, namely motivational CQ and behavioral CQ. While relying on existing knowledge, Cognitive CQ and Meta-Cognitive CQ are expected to play a lesser role with respect to IA outcomes (Early, Ang, & Tan, 2006; Shaffer & Miller, 2008). Calculated as the average of the two sub-dimensions.

Table 19: Dependent Variables

Variable	Question / Measurement
ICNP Inter-cultural Negotiation Planning	<p>“How much time do you spend on negotiation planning?”</p> <p>“在談判互動之前你是否會準備一份書面計畫?” 是/否</p> <p>7-point Likert scale: (1) none/very little, to (7) very significant.</p> <p>(Lewicki, Saunders, & Barry, 2006)</p>
ICNO Inter-cultural Negotiation Outcomes	<p>“How satisfied were you with your individual gains (e.g. discount earned, margin, risk, terms, etc.)?”</p> <p>“對於你個人利益的滿意度如何? (例如:折扣、利潤、風險、條款等)”</p> <p>7-point Likert scale: (1) not very satisfied, to (7) very satisfied. (Graham, 1985)</p>
ICNS Inter-cultural Negotiation Satisfaction	<p>“If an agreement was reached, how satisfied were you with the agreement.”</p> <p>如果達成了一項協議, 你對於協議的滿意度如何?”</p> <p>7-point Likert scale: (1) not very satisfied, to (7) very satisfied? (Graham, 1985; Gelfand & Christakopoulou, 1999)</p>
ICNPS Inter-cultural Negotiation Performance Satisfaction	<p>“Were you satisfied with your negotiation performance relative to your pre-negotiation expectations?”</p> <p>7-point Likert scale: (1) not very satisfied, to (7) very satisfied? (Graham, 1985)</p>

Procedures

For this examination, 3,100 email invitations requesting participation were sent by the deputy chief of the Taiwan External Trade Development Council (TAITRA). As members of this organization are known to travel extensively and frequently work away from their administrative posts, this invitation was repeated as a reminder two times during the six-week open participation period. Due to the confidential nature of the information being collected and the sensitivity to the privacy preferences of target population, the TAITRA deputy chief administered all outward contact and notification with survey respondents on behalf of the researcher.

The methods of analysis included demographic and univariate analysis, bivariate analysis, and hierarchical multiple regression, controlling for selected demographic variables. To understand the relationship between aggregate and sub-dimensional level cultural intelligence scores and intercultural negotiation outcomes, data were examined utilizing Pearson's product moment correlation. To understand the predictive relationships involved, hierarchical multiple regression was utilized.

Results of Data Analysis and Discussion

Descriptive Analysis

Table 10 displays the frequency counts for selected variables. The ages of the respondents ranged from 24 – 56 years ($M = 36.04$, $SD = 6.50$). There were somewhat more females (53.9%) than males (46.1%). Years of work experience ranged from 1 – 30 years ($M = 10.84$, $SD = 6.28$) and years of negotiating experience ranged from 1 – 26 ($M = 5.14$, $SD = 4.75$). All participants were college graduates and 46.1% of them had also earned a master's degree. Over half the respondents (56.9%) were engaged in the manufacturing industry. All but one respondent claimed citizenship of the Republic of China (Taiwan), while the remaining participant reported they held citizenship from the People's Republic of China (China) (Table 10).

A majority of participants reported spending "very significant time", "significant time", or "considerable time" planning for inter-cultural negotiation exchanges (62.8%) and 98% reported that they identified their goals in advance. As far as preparing a written plan in advance, 66.7% of respondents reported doing so and the majority of respondents reported developing other courses of action as alternatives in the event of a failed negotiation (58.8%) (Table 12).

Table 13 displays the psychometric characteristics for the seven summated scale scores. Cronbach alpha reliability coefficients ranged from $\alpha = .73$ to $\alpha = .88$ with the median sized coefficient being $\alpha = .83$. This suggested that all coefficients had acceptable levels of internal reliability (Creswell, 2003) (Table 13).

Univariate Analysis

Table 14 presents the means and standard deviations of aggregate cultural intelligence by age and negotiation experience. Aggregate cultural intelligence appeared to increase with age, category 24-29 ($M = 5.15$, $SD = 0.50$), category 30-39 ($M = 5.46$, $SD = 0.59$), category 40-49 ($M = 5.72$, $SD = 0.67$), while tapering somewhat in the final age category 50-56 ($M = 5.68$, $SD = 0.25$). Aggregate cultural intelligence consistently increased with negotiation experience, category 0 - 4 years ($M = 5.40$, $SD = 0.64$), category 5 - 9 years ($M = 5.47$, $SD = 0.48$), category 10 - 19 years ($M = 5.73$, $SD = 0.61$), and negotiation experience category 20 - 26 years ($M = 5.81$, $SD = 0.66$) (Table 14).

Multivariate Analysis

Table 16 displays the Pearson product-moment correlations between the seven independent variables and the four dependent variables. For the resulting 28 correlations, all were positive and 24 of 28 were statistically significant at the $p < .05$ level. The three largest correlations were: (a) intercultural negotiation performance satisfaction with the final cultural quotient ($r = .42, p < .001$); (b) intercultural negotiation performance satisfaction with the metacognitive average score ($r = .38, p < .001$); and (c) intercultural negotiation satisfaction with the final cultural quotient ($r = .39, p < .001$) (Table 16).

Table 17 displays the Pearson product-moment correlations between the 11 independent variables and the four control variables. The four control variables were negotiation experience, work experience, age, and educational level. For the resulting 44 correlations, 23 of 44 were statistically significant at the $p < .05$ level. The four largest correlations were: (a) performance satisfaction with negotiation experience ($r = .45, p < .001$); (b) performance satisfaction with work experience ($r = .41, p < .001$); (c) cultural judgment decision-making with work experience ($r = .40, p < .001$); and (d) cultural judgment decision-making with age ($r = .40, p < .001$) (Table 17).

Test of Hypotheses

Research Question 1 asked, “What is the relationship between aggregate cultural intelligence and intercultural negotiation outcomes?” and the related hypothesis predicted that, “H2: Negotiators with higher levels of aggregate CQ will have higher levels of ICNO than negotiators with lower levels of aggregate CQ.” To answer this question, Table 19 displays the relevant multiple regression model. The overall model was significant ($p = .003$) and accounted for 16.7% of the variance of the dependent variable. Inspection of the table found the final cultural quotient was moderately related to the intercultural negotiation outcome ($\beta = .30, p = .003$) (Table 19).

Research Question 2 asked, “What is the relationship between cultural intelligence and intercultural negotiation satisfaction?” and the related hypothesis predicted that, “H3: Negotiators with higher levels of aggregate CQ including MetCQ, CogCQ, MotCQ and BehCQ will have higher levels of ICNS than individuals with lower levels of CQ.” To answer this question, Table 20 displays the relevant multiple regression model. The overall model was significant ($p = .001$) and accounted for 23.9% of the variance of the dependent variable. Inspection of the table found the final cultural quotient was related to the intercultural negotiation satisfaction score ($\beta = .34, p = .001$) (Table 20).

Research Question 3 asked, “What is the relationship between cultural metacognition and cultural knowledge (Cultural Judgment and Decision Making) to intercultural negotiation planning?” and the related hypothesis predicted that, “H1: Negotiators with higher MetCQ and CogCQ will exhibit higher ICNP than individuals with lower MetCQ and CogCQ.” To answer this question, Table 18 displays the relevant multiple regression model. The overall model was not significant ($p = .11$) and accounted for 8.9% of the variance of the dependent variable. Inspection of the table found cultural judgment decision-making not to be related to intercultural negotiation planning ($\beta = .17, p = .12$) (Table 18).

Research Question 4 asked, “What is the relationship between cultural motivation and cultural behavior to intercultural negotiation performance satisfaction?” and the related hypothesis predicted that, “H4: Negotiators with higher levels of MotCQ and BehCQ will have higher levels of ICNPS than negotiators with lower levels of CQ.” To answer this question, Table 21 displays the relevant multiple regression model. The overall model was significant ($p = .001$) and accounted for 32.9% of the variance of the dependent variable. Inspection of the table found the interactional adjustment quotient was moderately related to the intercultural negotiation performance satisfaction score ($\beta = .29, p = .001$) (Table 21).

Interpretation of results

It is well established that the interpretation of research in the social sciences varies; hence, this study follows the interpretive guidelines established by Cohen, et al., (2003) relative to evaluating the strength of linear correlations. According to Cohen, et al., a “strong correlation” generally had an absolute value of $r = .50$ (reflecting the explanatory power of about twenty-five percent of the variance), a “moderate correlation” typically had an absolute value of $r = .30$ (reflecting the explanatory power of about nine percent of the variance), and a “weak correlation” generally had an absolute value of $r = .10$ (explaining about one percent of the variance). Each of the following correlations described represent “moderate” correlations reflecting the desire to interpret the results with a minimal potential for reporting data containing Type I errors and the avoidance of misdirected conclusions.

Inspection of the table found that the intercultural negotiation planning had no significant partial correlations with any of the seven independent variables. Intercultural negotiation outcome had significant partial correlations with five of seven independent variables with the largest partial correlation being with metacognitive average ($r_{ab.cdef} = .32, p < .005$). Intercultural negotiation satisfaction had significant partial correlations with six of seven independent variables with the largest partial correlation being with final cultural quotient ($r_{ab.cdef} = .35, p < .001$). Intercultural negotiation performance satisfaction had significant partial correlations with five of seven independent variables with the largest partial correlation being with motivational average ($r_{ab.cdef} = .35, p < .001$) (Table 16).

To sum up, this study examined the usefulness of the cultural intelligence theory as a performance predictor in inter-cultural business negotiations based on the data from 102 respondents. The results of this analysis suggests that aggregate cultural intelligence among experienced international negotiators can be used to predict the outcomes, satisfaction, and behavior of inter-cultural negotiations even when controlling for age, experience, and education.

SOBIE 2014

Table 20: Frequency Counts for Selected Demographic Variables (N = 102)

Variable	Category	<i>n</i>	%
Age Category ^a	24 to 29 years	14	13.7
	30 to 39 years	62	60.8
	40 to 49 years	21	20.6
	50 to 56 years	5	4.9
Sex	Female	55	53.9
	Male	47	46.1
Years of Work Experience ^b	1 to 4 years	14	13.7
	5 to 9 years	29	28.4
	10 to 14 years	31	30.4
	15 to 19 years	16	15.7
	20 to 30 years	12	11.8

^a Age: $M = 36.04$, $SD = 6.50$.

^b Work Experience: $M = 10.84$, $SD = 6.28$.

Table 4 *Continued*

Table 4 *Continued*

Variable	Category	<i>n</i>	%
Years of Negotiating Experience ^c			
	1 to 4 years	57	55.9
	5 to 9 years	24	23.5
	10 to 19 years	19	18.6
	20 to 26 years	2	2.0
Education Level			
	Bachelors	55	53.9
	Masters	47	46.1
Industry			
	Services	16	15.7
	Manufacturing	58	56.9
	Government/Education/Other	28	27.5

^c Negotiating Experience: $M = 5.14$, $SD = 4.75$.

SOBIE 2014

Table 21: Psychometric Characteristics for Summated Scale Scores (N = 102)

Scale	Number of Items	<i>M</i>	<i>SD</i>	Low	High	α
Metacognitive Average	4	5.72	0.72	3.50	7.00	.73
Cognitive Average	6	4.89	0.84	2.50	7.00	.81
Motivational Average	5	5.81	0.87	2.80	7.00	.87
Behavioral Average	5	5.54	0.88	2.80	7.00	.80
Cultural Judgment Decision Making	10	5.30	0.68	3.50	7.00	.83
Interactional Adjustment Quotient	10	5.67	0.75	3.60	7.00	.86
Final Cultural Quotient	20	5.49	0.61	3.70	6.65	.88

Note. Scale scores were based on a seven-point metric: 1 = *Strongly Disagree* to 7 = *Strongly Agree*.

SOBIE 2014

Table 22: Comparison of means of aggregate cultural intelligence by age and negotiation experience (N = 102)

Variable	Category	<i>M</i>	<i>SD</i>	Low	High	n
Age						
	24 to 29 years	5.15	.50	4.48	6.22	14
	30 to 39 years	5.46	.59	3.70	6.57	62
	40 to 49 years	5.72	.67	4.55	6.65	21
	50 to 56 years	5.72	.25	5.35	6.02	5
Negotiation experience						
	1 to 4 years	5.40	.64	3.70	6.65	57
	5 to 9 years	5.47	.48	4.56	6.29	24
	10 to 19 years	5.73	.61	4.55	6.65	19
	20 to 26 years	5.81	.66	5.35	6.28	2

Note. Scale scores were based on a seven-point metric: 1 = *Strongly Disagree* to 7 = *Strongly Agree*.

Table 23: Pearson Product-Moment Correlations between the Independent Variables with the Dependent Variables (N = 102)

Independent Variable	Dependent Variable ^a							
	1		2		3		4	
Cultural Judgment Decision Making	.24	*	.32	****	.34	****	.35	****
Final Cultural Quotient	.19	*	.33	****	.39	****	.42	****
Interactional Adjustment Quotient	.10		.24	*	.33	****	.36	****
Metacognitive Average	.23	*	.36	****	.35	****	.38	****
Cognitive Average	.19	*	.21	*	.24	**	.24	*
Motivational Average	.09		.32	****	.35	****	.37	****
Behavioral Average	.08		.10		.22	*	.24	**

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

^a Dependent Variables: 1 = Inter Cultural Negotiation Planning; 2 = Inter Cultural Negotiation Outcome; 3 = Inter Cultural Negotiation Satisfaction; 4 = Inter Cultural Negotiation Performance Satisfaction.

SOBIE 2014

Table 24: Pearson Product-Moment Correlations between the Scale Scores with the Control Variables (N = 102)

Scale Scores	Control Variables ^a			
	1	2	3	4
Cultural Judgment Decision Making	.34 ****	.40 ****	.40 ****	.27 **
Final Cultural Quotient	.27 **	.32 ****	.30 ***	.14
Interactional Adjustment Quotient	.13	.16	.12	-.01
Metacognitive Average	.30 ***	.34 ****	.31 ****	.20 *
Cognitive Average	.29 ***	.36 ****	.39 ****	.26 **
Motivational Average	.12	.12	.09	.02
Behavioral Average	.10	.15	.12	-.03
Planning Time	.23 *	.18	.16	.13
Outcome Satisfaction	.26 **	.14	.08	.05
Negotiation Satisfaction	.30 ***	.16	.14	.20 *
Performance Satisfaction	.45 ****	.41 ****	.36 ****	.21 *

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

^a Control Variables: 1 = *Negotiation Experience*; 2 = *Work Experience*; 3 = *Age*; 4 = *Education Level*.

Table 25: Prediction of Inter Cultural Negotiation Outcome Based on Final Cultural Quotient
Controlling for Selected Variables (N = 102)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
Intercept	3.01	1.63		.07
Negotiation Experience	0.07	0.03	.26	.04
Work Experience	0.04	0.06	.22	.46
Age	-0.07	0.05	-.38	.16
Education	0.10	0.24	.04	.67
Final Cultural Quotient	0.59	0.20	.30	.003

Full Model: $F(5, 96) = 3.84, p = .003. R^2 = .167.$

Note. Control variables were negotiation experience, work experience, age and education level.

Table 26: Prediction of Inter Cultural Negotiation Satisfaction Based on Final Cultural Quotient
Controlling for Selected Variables (N = 102)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
Intercept	0.53	1.84		.77
Negotiation Experience	0.10	0.04	.34	.007
Work Experience	-0.02	0.06	-.07	.79
Age	-0.04	0.06	-.16	.54
Education	0.54	0.27	.19	.05
Final Cultural Quotient	0.81	0.22	.34	.001

Full Model: $F(5, 96) = 6.02, p = .001. R^2 = .239.$

Note. Control variables were negotiation experience, work experience, age and education level.

Table 27: Prediction of Inter Cultural Negotiation Planning Based on Cultural Judgment and Decision Making Controlling for Selected Variables (N = 102)

Variable	<i>B</i>	<i>SE</i>	β	<i>p</i>
Intercept	2.94	1.57		.06
Negotiation Experience	0.05	0.03	.19	.16
Work Experience	0.01	0.06	.04	.89
Age	-0.02	0.05	-.09	.76
Education	0.20	0.26	.08	.44
Cultural Judgment Decision Making	0.31	0.19	.17	.12

Full Model: $F(5, 96) = 1.87, p = .11. R^2 = .089.$

Note. Control variables were negotiation experience, work experience, age and education level.

Table 28: Prediction of Inter Cultural Negotiation Performance Satisfaction Based on Interactional Adjustment Quotient Controlling for Selected Variables (N = 102)

Variable	<i>B</i>	<i>S</i>	β	<i>p</i>
Intercept	0.59	1.68		.73
Negotiation Experience	0.10	0.03	.33	.005
Work Experience	0.05	0.06	.22	.41
Age	-0.03	0.05	-.12	.62
Education	0.43	0.25	.15	.09
Interactional Adjustment Quotient	0.56	0.16	.29	.001

Full Model: $F(5, 96) = 9.42, p = .001. R^2 = .329.$

Note. Control variables were negotiation experience, work experience, age and education level.

Table 29: Partial Correlations between the Independent Variables and the Dependent Variables Controlling for Selected Variables (N = 102)

Independent Variable	Dependent Variable ^a				
	1	2	3	4	
Cultural Judgment Decision Making		.16	.29 ***	.26 **	19
Final Cultural Quotient		.13	.29 ***	.35 ****	.32 ****
Interactional Adjustment Quotient		.07	.22 *	.33 ****	.33 ****
Metacognitive Average		.16	.32 ***	.28 ***	.26 **
Cognitive Average		.11	.18	.17	.08
Motivational Average		.06	.29 ***	.34 ****	.35 ****
Behavioral Average		.06	.08	.22 *	.22 *

* $p < .05$. ** $p < .01$. *** $p < .005$. **** $p < .001$.

^a Dependent Variables: 1 = *Inter Cultural Negotiation Planning*; 2 = *Inter Cultural Negotiation Outcome*; 3 = *Inter Cultural Negotiation Satisfaction*; 4 = *Inter Cultural Negotiation Performance Satisfaction*.

Note. Control variables for these partial correlations were negotiation experience, work experience, age and education level.

Discussion of the Research Findings

The significance of this research is the evidence that cultural intelligence has been found to explain significant variance in intercultural business negotiation outcomes. Furthermore, to the best of this researcher’s knowledge, this is the only known study that examined the relationships between cultural intelligence and intercultural business negotiation outcomes with actual international business negotiators engaged in the regular conduct of their business, as compared to laboratory simulations. Additionally, it contributes to the intelligence literature as the results suggested that very specific forms of intelligence can be identified and measured, and are furthermore demonstrated to be malleable in nature in such a way that we can expect future gains from efforts expended on improving performance.

The Relationship Between Aggregate Cultural Intelligence and Intercultural Negotiation Outcomes

There is general agreement among scholars that intracultural negotiations have long been known to reach outcomes of higher value compared to intercultural negotiations (Adair & Bret, 2004; Thompson, 2009). While many scholars have examined the influence of culture on intercultural negotiation outcomes under controlled conditions (Imai & Gelfand, 2009; Simintiras & Thomas, 1997; Thompson, 2009; Miles, 2003; Leung, Bhagat, Buchan, Erez, & Gibson, 2005), a lesser number of scholars have focused on culture and

its influence on specific aspects of intercultural outcomes in uncontrolled conditions (Thomas, 2009; Shaffer & Miller, 2008; Chua, Morris, & Mor, 2012). To date, very few have concentrated their efforts on examining cultural intelligence and intercultural negotiation outcomes in uncontrolled conditions (Imai & Gelfand, 2010).

As predicted in Hypothesis 1, aggregate cultural intelligence had a positive, significant, and direct correlation with intercultural negotiation outcomes ($r = .33, p < .005$). Negotiators who have a greater ability to understand and adapt to the cultural situation, shape the context to meet their goals, and modify their behavior during intercultural negotiation exchanges tend to outperform negotiators who have a lesser ability to understand and adapt to situations characterized by cultural diversity. Notably, at the sub-dimension level, metacognitive cultural intelligence had the strongest positive correlation with intercultural outcomes ($r = .32, p < .001$).

The results of this hypothesis support and are consistent with previous studies that have measured the predictive ability of cultural intelligence on intercultural negotiations and have extended that research in two ways. First, the predictive ability was established by *directly* measuring the predictive relationship between cultural intelligence and negotiation outcomes, and second, by measuring the results of *actual* intercultural business negotiations as compared to examining the results of simulated negotiation exchanges.

In a related study examining the differences between intracultural and intercultural negotiations, scholars have examined the influence of ‘cultural moderators’ or the use of an individual from the target culture as part of a seller’s negotiating team in order to reduce the cultural distance between negotiating parties in attempts to positively influence economic outcomes (Wilken, Jacob, & Prime, 2013). Presumably, the more similar the negotiator’s cultures, the better chance they have at understanding the behaviors and values of each other and hence reach outcomes of higher value. Wilken, Jacob, and Prime (2013) found that the use of cultural moderators in these instances always help negotiators reach better economic outcomes, regardless of the specific cultural backgrounds involved. Indeed, the presence of a cultural moderator on the negotiating team was found to increase the use of cooperative, information sharing, and problem-solving strategies, which stimulated the increased use of integrative strategies, and for that reason have confirmed prior research that demonstrated the increase in joint gains through the reduction of cultural distance (Vochita, 2008). The results of Hypothesis 2 imply that relying on cultural intelligence as a proxy to reduce the negative effects of cultural distance between intercultural negotiators leads to improved integrative outcomes.

Furthermore, related research suggests that the use of a cultural moderator in competitive or distributive negotiation situations was also shown to benefit the economic gains of the team to which they were a member. This was due to the ability of the cultural moderator to exploit their cultural proximity to their negotiating opponent. Hence, cultural moderators, along with their native command of the cultural context of their negotiating counterpart, as well as the ability to effectively incorporate such behaviors into their negotiating repertoire, have resulted in situations in which they tend to reach higher outcomes (Wilken, Jacob, & Prime, 2013).

In sum, the results from hypothesis 1 support the existing research on intercultural effectiveness and extend that research by illustrating the beneficial utility outcomes derived by individuals who possess higher levels of aggregate cultural intelligence when engaged in non-simulated intercultural negotiations.

The Relationship Between Aggregate Cultural Intelligence and Intercultural Negotiation Satisfaction

The relationships between negotiation satisfaction and outcomes are well established in the literature and illustrate both positive (Curhan, Elfenbein, & Xu, 2006; Halpert, Stuhlmacher, Crenshaw, Licher, & Bortel, 2010) and negative (Galinsky, Seiden, Kim, & Medvec, 2002; Lewicki, Barry, & Saunders, 2010) associations. It is well established that individuals evaluate the satisfaction of their negotiation exchanges based on both objective outcomes, as well as the behaviorally focused, subjective outcomes of the exchange (Halpert, Stuhlmacher, Crenshaw, Licher, & Bortel, 2010). Objective outcomes are generally established through the comparisons of standards; for example, comparison of outcomes with pre-negotiation expectations, referred to as one's aspiration level in negotiation terms, and a comparison of objective outcomes relative to one's available alternatives, known as BATNA, or Best Alternative to a Negotiated Agreement in negotiation parlance (Fisher, Ury, & Patton, 1991). However, each of these two comparative standards suffers from a lack of situational reality. This is because negotiators largely do not know the value of the outcome to their negotiating opponent. They also do not know the opponent's specific alternatives, nor do they know with any certainty what the opponent would have accepted for their particular exchange, or indeed, what they have historically accepted for similar situations. Hence, the inherent shortcomings of objective outcome measurement in real-world negotiation exchanges buttress the argument for also examining subjective measurements of negotiation outcomes such as negotiator satisfaction.

While satisfaction outcomes may be influenced by variations in culture, evidence suggests that behavioral outcomes are influenced by culture more so than objective outcomes. As predicted in Hypothesis 2, aggregate cultural intelligence had a positive and direct correlation with intercultural negotiation satisfaction ($r = .39, p < .0005$). Negotiators who have a greater ability to understand and adapt to the cultural situation, shape the context to meet their goals, and modify their behavior during intercultural negotiation exchanges tend to achieve more personal satisfaction with negotiation exchanges than those who have a lesser ability. Notably, the correlation between aggregate cultural intelligence and negotiation satisfaction was higher than the correlation between aggregate cultural intelligence and negotiation outcomes (Hypothesis 1). This difference is perhaps best explained by observing that negotiators derive satisfaction from two sources: the extrinsic objective outcomes resulting from the exchange, as well as the satisfaction from the intrinsic relationship developed (or maintained) between the parties. Negotiators who succeed at meeting their extrinsic objectives earn satisfaction from the exchange, while negotiators who also are satisfied with the intrinsic elements, such as a continuing relationship, derive additional satisfaction which is additive to the overall levels of satisfaction.

The Relationship between CJDM and Intercultural Negotiation Planning

Of the four hypotheses contained within the study, this hypothesis is the only relationship that failed to reach statistical significance. To review, the results of the present study indicated that managers who have higher levels of metacognitive cultural intelligence and cognitive cultural intelligence, referred to as cultural judgment and decision-making, were not more likely to engage in planning activities associated with an upcoming intercultural negotiation. The results were not consistent with the results of a similar study conducted by Ang, et. al (2007) whom previously found evidence to the contrary. In particular, they did not agree with previous results that cultural judgment and decision making positively influenced the use of deliberate reasoning, evaluation of evidence, and objective comparisons, which collectively imply the reliance on specific data amassed based on planning efforts prior to and during the negotiation

exchange. The lack of empirical support from the present study suggests that culture specific intelligence competency bears no influence on the active pre-planning of intercultural exchanges..

The Relationship between Aggregate Cultural Intelligence and Intercultural Negotiation Performance-Satisfaction

There exists a strong research tradition relative to cross-cultural performance adjustment that focuses on converging constructs of expatriate assignments; namely, the assimilation, performance, satisfaction, and the return and re-assignment of expatriate workers after cross-cultural assignments (Zhang, 2012; Shaffer, Ferzandi, Harrison, Gregersen, & Black, 2006; Cole N. D., 2011). Supporting this convergence of research are motivational elements of Ryan and Deci's Self-Determination Theory (Ryan & Deci, 2000) as well as the intrinsic motivational aspects of Bandura's Self-Efficacy Theory (Bandura, 1997). As the field was expanded, this body of research focused on measures of individual differences such as the Big Five (Shaffer, Ferzandi, Harrison, Gregersen, & Black, 2006), gender (Cole & McNulty, 2011) and relevant stakeholders (Takeuchi, 2010), among others. The literature on intercultural effectiveness illustrates significant positive relationships between increased cultural sensitivity and understanding, and performance outcomes (Pedersen, 2009). Indeed, some research more narrowly examines the predictive qualities of cultural intelligence on expatriate worker effectiveness (Malek & Budhwar, 2012) and cross-cultural adjustment (Lin, Chen, & Song, 2012), and hence, individual satisfaction (Halpert, Stuhlmacher, Crenshaw, Licher, & Bortel, 2010).

Reviewing the results of the present study, the combination of motivational cultural intelligence and behavioral cultural intelligence, referred to as interactional adjustment accounted for 32.9% of the variance in performance-satisfaction. As predicted in Hypothesis 4, interactional adjustment had a positive and direct correlation with intercultural performance-satisfaction ($r = .29$, $p < .001$) which suggests that negotiators who have the desire to engage in intercultural exchanges, as well as the behavioral capability to display those behaviors appropriately, experienced greater satisfaction with their personal performance. Although not included in the composite sub-dimension of interactional adjustment, metacognitive cultural intelligence was markedly demonstrated to be the sub-dimension with the strongest correlation to intercultural negotiation performance-satisfaction ($r = .38$) with motivational cultural intelligence following just behind ($r = .37$).

The results of Hypothesis 4 are in alignment with the original interactional adjustment findings of Ang et al. (2007) which examined intercultural performance satisfaction with university students and extend those results to the real-world realm of intercultural negotiators. These findings may also serve to extend the work on cross-cultural adjustment by suggesting that higher interactional adjustment among intercultural negotiators reduces the level of performance uncertainty when operating in a foreign context. An individual's heightened interactional adjustment also serves to increase an intercultural negotiators self-efficacy and thereby psychologically expand one's confidence in their use of a broader repertoire of available behaviors during the exchange.

In sum, three of the four hypotheses were found to be significant and either support or extend the extant literature on cultural intelligence and intercultural exchange outcomes. The next section presents limitations and opportunities for future research.

Theoretical and Research Implications

The results of this research offer a number of contributions to the field. First, this study of the influence of aggregate and sub-dimensional facets of cultural intelligence is the first to examine the outcomes of real-world intercultural negotiation outcomes involved in the normal course of business. While self-report studies are susceptible to certain individual response biases, the use of laboratory simulations under artificial conditions also suffer from the rigor of study under situations where meaningful outcomes are less prevalent. As a result, these findings may help to corroborate or refute the work of related examinations or provide a basis for others to disembark.

Second, and not surprising, is that metacognitive cultural intelligence had the most influence on all measured intercultural negotiation outcomes. Indeed, the general theory of cultural intelligence suggests that individuals with higher levels of cultural intelligence are enabled to ‘make sense’ of culturally distinct situations to a greater extent than individuals with lower levels of cultural intelligence. This work found that cultural metacognition equipped individuals with a heightened ability to ‘make sense’ of foreign contextual cues above and beyond other known intercultural negotiation outcome influencers such as age, level of education, or negotiation experience

Finally, these research findings add a new perspective to the existing literature by suggesting that metacognitive cultural intelligence and motivational cognitive intelligence work together to enhance outcomes. Imai and Gelfand (2010) found that motivational cultural intelligence is strongly related to cooperative negotiation motives and the present study found that metacognitive cultural intelligence predicts satisfaction and outcomes. Taken together, it is conceivable that high metacognitive individuals build upon their heightened motivational cultural intelligence abilities in such a way that the shaping characteristics of cultural metacognition permit negotiators to respond in kind to their counterparties’ strategies and tactics with greater levels of persistence, energy, and skill, thereby further increasing outcomes.

The combination of cultural metacognition and cultural motivation shaping intercultural exchanges also serves to contradict earlier work by Imai and Gelfand (2010) whose research suggested that higher outcomes arising from sequences of integrative behaviors were limited to a ‘weakest link’ among the dyad. The present study suggests that while optimal outcomes may not be reached when one member of the negotiating dyad suffers from weak cultural intelligence, the other member of the exchange may be able to fill part of the gap through the correct appraisal and active shaping of the negotiation context.

Managerial Considerations

The practical utility of this research highlights the importance of efforts that more closely relate to the complex aspects of intercultural negotiation by first defining, and then focusing on specific aspects of the problem. This is particularly beneficial for the present study as the cultural intelligence model offers the benefit of “*theoretical precision*” (Gelfand, Imai, & Fehr, 2008, p. 376), a concept that identifies and defines specific cultural intelligence dimensions for practitioners to manipulate while attempting to improve an individual’s intercultural exchange outcomes. This approach to examining intercultural negotiation outcomes differs from practitioners’ traditional focus on issuing prescriptive advice often centered on the development of logic driven game theory, which suffer from the incorrect assumption that negotiators exclusively engage in a rational decision making processes designed to maximize their expected utility outcomes. Moreover, this work highlights the influence of the behavioral, motivational,

and affective factors on negotiation outcomes consistent with the growing interest in individual judgment research.

One final practical benefit of increased cultural intelligence on intercultural negotiation exchanges involves the ability to produce agreements that benefit from cross cultural perspective taking and the constructing of mutually beneficial solutions that reach higher joint value. As negotiation is in essence a communication activity, increasing an individual's ability to communicate (both speaking and listening) and appreciate the perspective, position, and environmental context of their culturally distinct counterparty enables individuals to suspend judgment and foster the creative dynamics necessary to develop mutually beneficial and higher valued solutions.

Conclusion

The importance of intercultural exchanges, particularly business negotiations continues to play a role in our increasingly interrelated global economy. This paper has attempted to extend the literature on the influence of cultural intelligence on intercultural effectiveness by examining the international business negotiation outcomes of experienced international negotiators involved in the actual conduct of their business. In summary, the cultural intelligence construct and related sub-dimension scores are an ideal point at which to launch more sophisticated intercultural assignment programs as well as explore cultural capacity-enhancement training initiatives customized to the particular needs of individual negotiators may equip them to produce agreements/solutions of high value.

Bibliography

- Actuary, O. o. (2009, November 12). *Disability Insurance Trust Fund*. Retrieved January 20, 2014, from Social Security Online Trust Fund Data: <http://www.ssa.gov/oact/ProgData/describedi.html>
- Adair, W. (2003). Integrative sequences and negotiation outcome in same and mixed culture negotiations. *The International Journal of Conflict Management*, 14(3), 273-296.
- Adair, W., & Bret, J. M. (2004). Culture and Negotiation Process. In M. J. Gelfand, & J. M. Bret, *The Handbook on Negotiation and Culture* (pp. 158-176). Stanford: Stanford Business Books.

- Adair, W., Brett, J. M., & Okumura, T. (2001). Negotiation behavior when cultures collide: The United States and Japan. *Journal of Applied Psychology*, 86(3), 371-385.
- Adler, N. J., & Graham, J. L. (1989). Cross-Cultural Interaction: The International Comparison Fallacy? *Journal of International Business Studies*, 515-537.
- Administration, S. S. (n.d.). *Disability Evaluation Under Social Security*. Retrieved January 20, 2014, from Social Security.
- Ang, S., & Van Dyne, L. (2008). Conceptualization of Cultural Intelligence. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence* (pp. 3-15). Armonk: M.E. Sharpe.
- Ang, S., Van Dyne, L., & Tan, M. L. (2011). Cultural Intelligence. In R. J. Sternberg, & S. B. Kaufman, *Cambridge Handbook on Intelligence* (pp. 582-601). Cambridge: Cambridge University Press.
- Ang, S., Van Dyne, L., Koh, C., Ng, .. Y., Templer, K. J., Tay, C., et al. (2007). Cultural Intelligence: Its Measurement and Effects on Cultural Judgment and Decision Making, Cultural Adaptation, and Task Performance. *Management and Organization Review*, 3(03), 335-371.
- Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Telpler, K. J., Tay, C., et al. (2007). Cultural Intelligence: It's measurement and Effects on Cultural Judgement and Decision Making, Cultural Adaption and Task Performance. *Management and Organization*, 3(3), 335-371.
- Audit, T. O. (2013). *The Social Security Administration's Reporting of High-dollar Overpayments Under Executive Order 13520 in Fiscal Year 2013*. Baltimore, MD: Office of the Inspector General.
- Autor, D., & Duggan, M. (2003). The Rise in the Disability Rolls and the Decline in Unemployment. *Quarterly Journal of Economics*, 157-206.
- Baker, D. (2013, October 6). *CBS News 60 Minutes Joins the Disability Bashing Bandwagon*. Retrieved January 20, 2014, from Center for Economic and Policy Research: <http://www.cepr.net/index.php/blogs/beat-the-press/cbs-news-60-minutes-joins-the-disability-bashing-bandwagon>
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W.H.Freeman.
- Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology*, 52, 1-26.
- Benoiel, M. (2011). *Negotiation Excellence: Successful Deal Making*. Singapore: World Scientific Publishing.
- Brislin, R., Worthley, R., & MacNab, B. (2006). Cultural Intelligence: Understanding Behaviors That Serve People's Goals. *Group Organizational Management*, 31(1), 40-55.
- Burkhouser, R., & Daly, M. (2011). *The Declining Work and Welfare of People with Disabilities: What Went Wrong and a Strategy for Change*. Washington, DC: AEI Press.
- CBS/AP. (2014, January 7). *Cops, firefighters among 100 former NYC workers charged in disability scam*. Retrieved January 18, 2014, from CBSNews.com: <http://www.cbsnews.com/news/100-nyc-workers-charged-in-disability-scam/>
- Christensen, K., Doblhammer, G., Rau, R., & Vaupel, J. W. (2009). Ageing Populations: The Challenges Ahead. *Lancet*, 1196-208.

- Chua, R. Y., Morris, M. W., & Mor, S. (2012). Collaborating across Cultures: Cultural Metacognition & Affect-Based Trust in Creative Collaboration. *Organizational Behavior and Human Decision Processes*, In press.
- Chung, M., & Ingleby, R. (2011). The applicability of Western socio-legal frameworks to the study of negotiation in Chinese society. *Journal of Higher Education Policy and Management*, 169-177.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.). New Jersey: Erlbaum.
- Cole, N. D. (2011). Managing global talent: solving the spousal adjustment problem. *The International Journal of Human Resource Management*, 1504-1530.
- Cole, N., & McNulty, Y. (2011). Why do female expatriates "fit-in" better than males? *Cross Cultural Management: An International Journal*, 144-164.
- Creswell, J. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (2 ed.). Thousand Oaks: Sage.
- Curhan, J. R., Elfenbein, H. A., & Xu, H. (2006). What Do People Value When They Negotiate? Mapping the Domain of Subjective Value in Negotiation. *Journal of Personality and Social Psychology*, 493-512.
- DeDreu, C., Weingart, L., & Kwon, S. (2000). Influence of social motives on integrative negotiation: A meta-analytic review and test of two theories. *Journal of Personality and Social Psychology*, 78, 889-905.
- Earley, P., & Ang, S. (2003). *Cultural Intelligence: Individual interactions across cultures*. Palo Alto: Oxford University Press.
- Early, P. C., Ang, S., & Tan, J. (2006). *Developing Cultural Intelligence at Work*. Stanford, CA: Stanford Business Books.
- Fisher, R., Ury, W., & Patton, B. (1991). *Getting to Yes: Negotiating agreement without giving in* (2nd ed.). New York: Penguin.
- Flavell, J. (1979). Metacognition and cognitive monitoring: A new era of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911.
- Galinsky, A. D., Seiden, V. L., Kim, P. H., & Medvec, V. H. (2002). The Dissatisfaction of Having Your First Offer Accepted: The Role of Counterfactual Thinking in Negotiations. *Personality and Social Psychology Bulletin*, 271-283.
- Gelfand, M. J., & Brett, J. M. (2004). *The Handbook of Negotiation and Culture*. Stanford: Stanford University Press.
- Gelfand, M. J., & Christakopoulou, S. (1999). Culture and Negotiator Cognition: Judgment Accuracy and Negotiation Processes in Individualistic and Collectivistic Cultures. *Organizational Behavior and Human Decision Processes*, 79, 248-269.
- Gelfand, M., Imai, L., & Fehr, R. (2008). Thinking Intelligently About Cultural Intelligence. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement, and Applications* (pp. 375-387). Armonk: M.E. Sharpe.
- Graham, J. L. (1985). Cross-Cultural Marketing Negotiations. *Marketing Science*, 130-146.

- Graham, J. L. (1985). Cross-Cultural Marketing Negotiations. *Marketing Science*, 130-146.
- Graham, J. L., Mintu, A. T., & Rodgers, W. (1994). Explorations of Negotiation Behaviors in Ten Foreign Cultures Using a Model Developed in the United States. *Management Science*, 72-95.
- Hall, E. T. (1959). *The Silent Language*. New York: Doubleday.
- Halpert, J. A., Stuhlmacher, A. F., Crenshaw, J. L., Licher, C. D., & Bortel, R. (2010). Paths to Negotiation Success. *Negotiation and Conflict Management Research*, 91-116.
- Hart, P. (2013, October 7). *What Did 60 Minutes Get Wrong About Disability*. Retrieved January 20, 2014, from Fairness & Accuracy In Reporting: <http://www.fair.org/blog/2013/10/07/what-did-60-minutes-get-wrong-about-disability/>
- Imai, L., & Gelfand, M. (2009). Culture, conflict, and negotiation. In R. S. Bhagat, & R. M. Steers, *Cambridge Handbook of culture, organizations, and work* (pp. 339-372). Cambridge: Cambridge University Press.
- Imai, L., & Gelfand, M. J. (2009). Culture, conflict, and negotiation. In R. S. Bhagat, & R. M. Steers., *Cambridge Handbook of culture, organizations, and work* (pp. 334-372). Cambridge: University Press.
- Imai, L., & Gelfand, M. J. (2010). The culturally intelligent negotiator: The influence on Cultural Intelligence (CQ) on negotiation sequences and outcomes. *Organizational Behavior and Human Decision Processes*, In press.
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review." *Psychological bulletin* 127, no. 3 (2001): 376. *Psychological Bulletin*, 376-407.
- Kim, E.-M. (1998). *The four Asian tigers: economic development and the global political economy*. San Diego: Academic Press.
- Koneya, M., & Barbour, A. (1976). *Louder than words...Nonverbal communications*. Columbus: Merrill.
- Kroft, S. (2013, October 10). *60 Minutes*. Retrieved January 20, 2014, from CBSNews.com: <http://www.cbsnews.com/news/disability-usa/>
- Law, K. S., Wong, C.-S., & Song, L. J. (2004). The Construct and Criterion Validity of Emotional Intelligence and Its Potential Utility for Management Studies. *Journal of Applied Psychology*, 89(3), 483-496.
- Leung, K., Bhagat, R. S., Buchan, n. R., Erez, M., & Gibson, C. B. (2005). Culture and International Business: Recent Advances and Their Implications for Future Research. *Journal of International Business Studies*, 357-378.
- Lewicki, R., Barry, B., & Saunders, D. M. (2010). *Negotiation*. New York: McGraw Hill.
- Lewicki, R., Saunders, D., & Barry, B. (2006). *Negotiation*. Singapore: McGraw Hill.
- Lin, Y.-c., Chen, A. S.-y., & Song, Y.-c. (2012). Does your intelligence help to survive in a foreign jungle? The effects of cultural intelligence and emotional intelligence on cross-cultural adjustment. *International Journal of Intercultural Relations*, 541-552.

- Luo, Y., & Shenkar, O. (2002). *An empirical inquiry of negotiation effects in cross-cultural joint ventures* (Vol. 8). Journal of International Management.
- Maestas, N., Mullen, K., & Strand, A. (2012, August). Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt. *Michigan Retirement Research Center*. Ann Arbor, Michigan: University of Michigan.
- Malek, M. A., & Budhwar, P. (2012). Cultural intelligence as a predictor of expatriate adjustment and performance in Malaysia. *Journal of World Business*, in press.
- Malhotra, D., & Bazerman, M. (2008). Psychological Influence in Negotiation: An Introduction Long Overdue. *Journal of Management*, 34(3), 509-531.
- Miles, M. (2003). Negotiating with the Chinese: Lessons from the Field. *Journal of Applied Behavioral Science*, 453-472.
- Morris, M. W., & Gelfand, M. J. (2004). Cultural Differences and Cognitive Dynamics: Expanding The Cognitive Perspective on Negotiation. In M. J. Gelfand, & J. M. Bret, *The Handbook of Negotiation and Culture* (pp. 45-70). Stanford: Stanford University Press.
- Nadler, J., Thompson, L., & Van Boven, L. (2003). Learning Negotiation Skills: Four Models of Knowledge Creation and Transfer. *Management Science*, 529-540.
- Pedersen, P. J. (2009). Assessing intercultural effectiveness outcomes in a year-long study abroad program. *International Journal of Intercultural Relations*, 70-80.
- Robbins, S. P., & Judge, T. A. (2009). *Organizational Behavior*. Upper Saddle River: Pearson.
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 68-78.
- Salacuse, J. (1988). Making Deals in Strange Places. *Negotiation Journal*, 4(1), 5-13.
- Schneider, A. K. (2002). Shattering Negotiation Myths. *Harvard Negotiation Law Review*, 142-233.
- Sekaran, U. (2000). *Research Methods for Business* (3rd ed.). New York, NY: John Wiley and Sons.
- Shaffer, M. A., Ferzandi, L. A., Harrison, D. A., Gregersen, H., & Black, J. S. (2006). You can take it with you: Individual differences and expatriate effectiveness. *Journal of Applied Psychology*, 91, 109-125.
- Shaffer, M., & Miller, G. (2008). Cultural Intelligence: A Key Success Factor for Expatriates. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement and Applications* (pp. 107-125). Armonk: M.E. Sharpe.
- Simintiras, A., & Thomas, A. (1997). Cross Cultural Sales Negotiations. *International Marketing Review*, 10-28.
- Sternberg, R. J. (1999). Successful Intelligence: finding a balance. *Trends in Cognitive Science*, 3(11), 436-442.
- Sternberg, R. J., & Detterman, D. J. (1986). *What is intelligence: Contemporary viewpoints on its nature and definition*. Norwood, NJ: Ablex.

- Takeuchi, R. (2010). A Critical Review of Expatriate Adjustment Research Through a Multiple Stakeholder View: Progress, Emerging Trends, and Prospects. *Journal of Management*, 1040-1064.
- Templer, K. J., Tay, C., & Chandrasekar, N. A. (2006). Motivational Cultural Intelligence, Realistic Job Preview, Realistic Living Conditions Preview, and Cross Cultural Adjustment. *Group and Organizational Management*, 31(1).
- Thomas, D. C. (2006). Domain and Development of Cultural Intelligence: The Importance of Mindfulness. *Group and Organization Management*, 78-99.
- Thomas, D. C. (2009). *Cultural Intelligence living and working globally*. San Francisco: Berrett-Koehler.
- Thompson, L. L. (2009). *The Mind and Heart of the Negotiator*. Upper Saddle River: Prentice Hall.
- Triandis, H. (2006). Cultural Intelligence in Organizations. *Group and Organization Management*, 31(1), 20-26.
- United States Department of Agriculture. (2012, December 31). *International Macroeconomic Data Set*. Retrieved April 7, 2013, from USDA: <http://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx>
- Van Dyne, L., Ang, S., & Koh, C. (2008). Development and Validation of the CQS. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement, and Applications* (pp. 16-40). Armonk, NY: M.E.Sharpe.
- Vochita, L. (2008). The Role of Culture on International Negotiations. *Annals of the University of Petrosani*, 297-302.
- Weingart, L. R., & Olekalns, M. (2004). Communication Process in Negotiation. In M. J. Gelfand, & J. M. Brett, *The Handbook of Negotiation and Culture: Frequencies, Sequences, and Phases* (pp. 143-176). Stanford: Stanford University Press.
- Whetton, D. (2011). *Developing Management Skills*. NJ: Pearson.
- Wigfield, A., & Eccles, J. (2000). Expectancy-Value Theory of Achievement Motivation. *Contemporary Educational Psychology*, 25, 68-81.
- Wilken, R., Jacob, F., & Prime, N. (2013). The ambiguous role of cultural moderators in intercultural business negotiations. *International Business Review*, 736-753.
- Zhang, Y. (2012). Expatriate Development for Cross-Cultural Adjustment: Effects of Cultural Distance and Cultural Intelligence. *Human Resource Deveopment Review*, 177-199.

Rankings, Spreads, and Winning BCS College Football Games

Evan Moore
Solomiya Lyshenyuk
Auburn University at Montgomery

Abstract

We investigate predictors for the outcomes of Bowl Championship Series (BCS) college football games. We evaluate whether the differences in rankings between teams and the point spread are good predictors for outcomes of Bowl Championship Series games, which involve top ranked teams in the NCAA Division I Football Bowl Subdivision. We use probit regressions with the differences in ranking, differences in the log rankings, and the point spread as the predictors of the outcomes of the games.

Introduction

We investigate predictors for the outcomes of Bowl Championship Series (BCS) college football games. We test whether ranking differences, using rankings from the Associated Press (AP) and the USA Today polls, are good predictors for Bowl Championship Series (BCS) game victories for the 1998-1999 through 2013-2014 college football seasons.¹ This testing also allows for a comparison of the rankings by these polls. We also test whether the point spread, or line, is a good predictor for BCS game victories.

Interest in rankings of athletic competitors is growing. Lebovic and Sigelman (2001) note that college football rankings, "...have by no means escaped the notice of social scientists and statisticians, who have probed the predictive accuracy of various ranking and rating schemes." Their work uses AP poll data to show weekly changes in rankings. These authors also provide a concise overview of works from the 1980s and 1990s on college football rankings. However, none of these works uses differences in rankings to predict college football victories. Differences in rankings have been found to be good predictors of winning other various sporting contests. Boulrier et al (1999) find ranking differences are useful predictors in NCAA basketball games and professional tennis matches. Rankings differences were also found to be useful predictors for Grand Slam tennis matches by del Corral and Prieto-Rodriguez (2010).

A priori, we anticipate the point spread to serve as the best predictor for BCS game victories. This is due to the fact that the rankings are established following the last regular season or conference championship game for each team participating in a BCS game, and these rankings are given weeks prior to the bowl games actually being played.² However, the point spread

¹ The USA Today poll is also known as the Amway Coaches poll.

² In some cases there is more than a month between a team's last regular season game and their BCS game.

reflects information available to bettors up to the start of the game. In this sense, the bettors are able to incorporate the rankings that are available along with additional information, e.g. player injuries or suspensions, coaching changes, etc., which would not have been available to pollsters at the time their rankings were announced. Due to the informational advantage available to bettors we expect the point spread to best predict victory.

We chose the BCS bowl games as the focus of the study for three primary reasons:

- (1) Virtually all of the games involve two ranked teams.³
- (2) These are the most watched college football games according to Nielson ratings.
- (3) For a given year, the rankings prior to the bowl games better reflect that season's actual performance relative to preseason or earlier in the season rankings.

We find that rankings differences may be useful predictors for BCS bowl game victories. However, this finding pertains to the USA Today poll and the best predictive power with differences in log ranks, suggesting that quality differences grow at an increasing rate at higher rankings.

Data

The Associate Press poll consists of weekly voting from a panel of sports writers and broadcasters from around the country; currently the panel consists of 60 voters. The USA Today poll consists of weekly voting from a panel of head coaches at Bowl Subdivision schools; this panel currently consists of 62 head coaches. These polls provide rankings for the top 25 teams. The rankings data was collected from www.espn.com and *The New York Times*. The rankings data used in this analysis consists of the final rankings of the BCS teams *prior* to their bowl games, i.e. the rankings following the last regular season or conference championship game for each team participating in a BCS game. The point spread and totals, i.e. over/under, data was collected from www.covers.com.

There were 72 BCS games played from the 1998 -1999 through 2013-2014 seasons, with 1998-1999 being the introduction of the BCS. From the 1998-1999 through 2005-2006 seasons there were 4 BCS games per season. This changed to 5 BCS games per season in 2006-2007. Thus, the data used in the analysis below reflects all BCS games to date.

³ The two exceptions being the 2011 Fiesta Bowl involving a team from the University of Connecticut, which was unranked in the USA Today poll, and the 2013 Rose Bowl involving a team from Stanford University, which was unranked in the AP Poll.

Table 1. Descriptive statistics

	AP	USA	
		Today	Point spread
Higher ranked/favored team wins	46	40	44
Number of games	72	72	71
Predicted win percentage	63.89%	55.56%	61.97%
Mean rank difference/mean point spread	-4.68	-4.44	-7.09
Standard deviation	4.72	4.29	4.19

Table 1 presents an overview of the number of wins and winning percentages for higher ranked teams by poll and for favored teams by point spread. The winning percentages of the AP poll and point spread are similar and exceed 60 percent, while the higher ranked teams according to the USA Today poll won just under 56 percent. In the 6 fewer wins by higher ranked teams with the USA Today poll, the differences in ranks were just 1 position in 4 instances and 2 positions in the remaining 2 instances. These “upsets” could be viewed as not particularly surprising given the closeness in rankings by the teams playing in these matchups.

Methodology and results

We use two approaches for the differences in rankings. We use the difference $s_1 - s_2$, where s_1 is the ranking of the higher ranked team and s_2 is the ranking of the lower ranked team in a manner similar to Boulier et al (1999). We also use the difference between the natural logarithms of the rankings, i.e. $\log(s_1) - \log(s_2)$, similar to that of del Corral et al (2010). The first approach provides a simple linear difference between the ranks. The second approach provides a nonlinear measure that allows for greater differences between teams as they move up the rankings. This method suggests that a one position difference in rankings is more substantial for higher ranked teams than for lower ranked teams.

The dependent variable takes a value of 1 if the higher ranked or favored team wins in the probit models to follow. The independent variables for the differences in rankings are negative values; a higher ranked team has a lower number than a lower ranked team.⁴ The point spread independent variable is non-positive; the spread is reported as a negative number for the favored team or as zero if the point spread does not indicate a favorite.⁵

Table 2 presents the estimated coefficients of the probit equations for the linear differences in ranking by each poll and the point spread.

⁴ For example, a team ranked #3 is higher ranked than a team ranked #7.

⁵ A point spread of zero only occurred in one instance, the 2001 Rose bowl.

SOBIE 2014

Table 2. Probit results for poll differences and point spread

	AP Top 25		USA Today		Point Spread	
	Coeff.	St. dev.	Coeff.	St. dev.	Coeff.	St. dev.
<i>Constant</i>	0.204	0.217	-0.248	0.224	0.170	0.297
<i>Rank difference/point spread</i>	-0.030	0.034	-0.088**	0.041	-0.019	0.036
Brier Score	0.2297		0.2308		0.2347	
N	71		71		71	
LR Test	0.78		5.23		0.28	
Pseudo R ²	0.008		0.054		0.003	
Log likelihood	-46.24		-46.25		-47.02	

Notes: * is significance at 10 percent, ** is significance at 5 percent, and *** is significance at 1 percent.

The signs of the coefficients are as expected. Negative values indicate that higher ranked and favored teams are more likely to win. However, only the *Rank difference* coefficient from the USA Today poll model indicates a statistically significant result at the usual levels.

Table 3 presents the estimated coefficients of the probit equations for the log differences in ranking by each poll and, for the sake of comparison, the point spread once again.⁶

Table 3. Probit results for log differences in polls and point spread

	AP Top 25		USA Today		Point Spread	
	Coeff.	St. dev.	Coeff.	St. dev.	Coeff.	St. dev.
<i>Constant</i>	-0.020	0.304	-0.598*	0.328	0.170	0.297
<i>Rank difference/point spread</i>	-0.508	0.374	-1.030**	0.42	-0.019	0.036
Brier Score	0.226		0.2261		0.2347	
N	71		71		71	
LR Test	1.91		6.55		0.28	
Pseudo R ²	0.021		0.067		0.003	
Log likelihood	-45.68		-45.59		-47.02	

Notes: * is significance at 10 percent, ** is significance at 5 percent, and *** is significance at 1 percent.

The negative and significant coefficients on the rankings differences for the USA Today poll models indicate that the probability of winning a BCS bowl game is a function of the difference in rankings of the teams. Note that the Brier scores for the log difference models indicate that these are the best fitting of the results presented in tables 3 and 4. This suggests that there are quality differences at higher ranks relative to lower ranked teams.

⁶ We also used the squared rankings differences, $s_1^2 - s_2^2$, as the independent variable in models that are available upon request. This difference in rankings indicates that lower ranked teams would have greater quality differences than higher ranked teams. This would not be expected and the results from these models were not statistically significant and resulted in the worst fitting Brier scores relative to the models presented in tables 3 and 4.

Conclusions

This study presents results concerning the usefulness of rankings differences and point spreads in predicting winners of BCS games. Our results suggest the rankings of a subset of the coaches of the Bowl Subdivision Schools, i.e. those polled by USA Today, are useful in that the difference in these rankings better indicate the likelihood of a higher ranked team winning. This is not the case for the rankings provided by sportswriters and broadcasters around the country, i.e. those polled for the AP poll. Additionally, we were surprised to find that the size of the point spread was not useful in predicting the likelihood of the favored team winning. Our prior was that the difference in the point spread would best predict victory due to the informational advantage available to bettors.

References

Boulier, B.L and **H.O. Stekler**. “Are sports seeding good predictors?: an evaluation” *International Journal of Forecasting*, 1999, Vol. 15, 83-91.

del Corral, J. and **J. Prieto-Rodriguez**. “Are differences in ranks good predictors for Grand Slam tennis matches?” *International Journal of Forecasting*, 2010, Vol. 26, 551-63.

Lebovic, J. H.and **L. Sigelman**. “The forecasting accuracy and determinants of football rankings.” *International Journal of Forecasting*, 2001, Vol. 17, 105-20.

Fraud and the Bankrupting of the Social Security Disability Trust Fund

Rita C. Jones, PhD., CMA
Troy University

Teresa K. Lang, PhD., CPA, CISA
Auburn University Montgomery

Keith E. Atkinson, PhD., CPA
University of Central Arkansas

Abstract

There have been significant increases in the number of individuals applying for Social Security Disability Insurance (DI) benefits over the past ten years, especially during 2007-2012. The impact this is having on the Social Security Disability Insurance Trust Fund (the Fund) is devastating. Although the Fund has experienced years of increases and decreases since its inception in 1956, no single change is as significant as in 2009 when the Fund's disbursements were \$12,223 million more than its receipts. If drastic measures are not taken very soon, the Fund could very well be bankrupt by as early as 2018. With this in mind, this paper focuses on the DI Program, including the establishment of the program; the process of qualifying for benefits; receipts by and payments from the Fund; suspicion of fraud; as well as steps taken to detect and prevent fraud.

Introduction

Causes are debatable for the increase in the number of individuals covered by Social Security Disability Insurance (DI) over the past ten years, especially focusing on the period from 2007-2012, but the state of the Social Security Disability Insurance Trust Fund (the Fund) is not. Although the Fund has experienced years of increases and decreases since its inception in 1956, no change is as significant as in 2009 when the Fund's disbursements were \$12,223 million more than its receipts. Prior to this, the single largest shortfall was \$3,361 million in 1993, just before the legislature reallocated a larger portion of the OASI (Old Age Security Insurance) taxes to the Fund to increase its Receipts. The single largest increase in the Fund balance was \$22,534 million in 2001, when as history has shown, the market was inflated.

This paper focuses on the DI Program, including the establishment of the program; the process of qualifying for benefits—both regular and fast track; receipts by and payments from the Fund; citations regarding fraud perpetrated on the Fund; procedures developed for the detection of fraud as well as the steps that are taken to prevent fraud in the future.

Background

Old-Age, Survivors and Disability Insurance

Before the Social Security System (SSS), individuals provided for their own well-being after retirement. Families took care of their aged parents, and if a family member became disabled, often they were cared for by family members until they recovered. After recovery, they returned to work, either in the same occupation or perhaps, because of limitations caused by the disability, they changed occupations to accommodate their disability and still be able to earn a living. If returning to the workforce was not an option, the burden fell to the families, friends, or government assistance programs to help with long-term care.

The Social Security Act was passed in 1935 and is commonly referred to as FICA (the Federal Insurance Contributions Act). Two decades later in 1956, an Amendment passed which provided for the Social Security Disability Insurance Program, and in turn the Disability Insurance Trust Fund was created. The Fund became effective on January 1, 1957, and it is funded by taxes collected via FICA and the Self-Employment Contributions Act. A portion of collections received under FICA are used to pay monthly benefits to disabled-worker beneficiaries and their spouses and children (Actuary, 2009). This system has evolved over the years and is currently referred to as the Old-Age, Survivors and Disability Insurance (OASDI) program. DI is a component of the OASDI, and this paper will focus on fraud in the DI program (Audit, 2014).

Qualifying For Disability Insurance Benefits

DI Definition and Application

The DI program defines disability as the “inability to engage in substantial, gainful activity by reason of any medically determinable physical or mental impairment(s) which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months.” The recipient must also fall below a specific earnings level, which as of 2013 is just over \$1000 per month. This earnings level affects both entry into and continuation in the program (Social Security Administration, 2014). In order to qualify for benefits, individuals must have earned 40 work credits (covered quarters), and 20 of the credits must have been earned in the last 10 years. Younger individuals have a reduced credit requirement.

Individuals apply for benefits at the local Social Security field office. The field office reviews applications for nonmedical eligibility requirements such as age, employment, marital status, and Social Security coverage and issues a “technical denial” (no further review) or forwards the application to the state Disability Determination Services (DDS) office.

Normal Claims Processing or Fast Track

Once at the DDS, the application is assigned to a disability examiner who evaluates the applicant’s own sources of medical and other information and renders the initial determination. If there is not enough evidence for that determination, the DDS will arrange for a consultative examination. In cases where it is clear to the disability examiner that the applicant has a severe disability, is blind or terminally ill and is likely to receive a favorable DI determination, Fast Track (FT) procedures are used to continue processing the application FT procedures were developed to deal with the large population of Baby Boomer’s to give a quick determination of

the application for DI benefits. Under the FT guidelines, the examiner follows a five-step sequential evaluation process to determine eligibility including (Rajnes, 2012):

- 1) a work test;
- 2) an impairment severity test;
- 3) a medical listing test;
- 4) a test for the ability to perform previous work; and
- 5) a test for the ability to perform any type of work

DI Application Approved or Denied and Subject to Appeal

If the DDS finds that the applicant is disabled, the SSA computes the benefit amount and begins paying benefits. If there is an unfavorable determination, the order of appeals is: 1) reconsideration by the DDS, 2) a hearing in front of a federal administrative law judge (ALJ) in SSA's Office of Disability Adjudication and Review, 3) a request that the Appeals Council review the ALJ's decision, and finally, 4) an appeal to the federal court system (Rajnes, 2012). The timing during the appeals process gives applicants 60 days to file their initial appeal. If denied again by the original DDS office, the applicant has 60 additional days to appeal to an ALJ (Maestas, Mullen, & Strand, 2012). The Maestas study found that almost two-thirds of the applicants in their sample ultimately received benefits within six years of their initial determination.

To more efficiently process DI applications, the DDS began shifting to a fully electronic system in 2004, and by 2008, all DI claims are processed electronically via folders. This system has made it possible for field offices and other case-processing agencies to share information more quickly, flag cases as information becomes available, and be used as a predictive model for identifying claims that are likely to receive approval. This electronic modeling system is now widely used by the DDS and has resulted in expedited determination of DI benefits and claims processing (Rajnes, 2012).

Link Between Unemployment Rates and DI Applications

From early 2007 to late 2009, the U.S. unemployment rate rose from 4.4% to 10% before retreating to about 7.6% in July 2013. Likewise, during 2007 to 2011, the number of DI applications increased 34% according to a recent report from the OIG (oig.ssa.gov, 2014). In reference to these increases, Inspector General O'Carroll, Senators Tom Coburn and Orrin Hatch wrote, "Given the looming collapse of [Social Security] DI, it is imperative that disability claims are properly examined to ensure that only those who are lawfully entitled to benefits receive them." (oig.ssa.gov, p.2). They also proclaimed that exploiting the DI system and transforming it into a supplemental source of unemployment income could not be allowed.

The focus of the OIG appears to be on the rate of approval of claims during the recessionary period 2007-2011 compared with non-recessionary times. Perhaps the more serious issue to bring into question should be whether there really has been a significant increase in the number of truly disabled, former workers. Logic would tell one that if the number of applications increased, and the percent of approvals held constant, then the number of approvals increased. The impact of this increase in the number of beneficiaries is significant as is shown very clearly in Table 1.

In spite of the increase in DI applications, it was determined that applicants waited longer than normal after stopping work to file an application. This delay most likely was caused by

extensions to unemployment insurance benefits. To investigate that train of reasoning, a study was conducted by the White House (2011) which confirms this and also finds that unemployed persons aged 50 – 65, without access to at least \$5,000, are much more likely to apply for DI as their unemployment benefits are about to expire.

Costs To Provide Disability Insurance Benefits

As noted earlier, the Social Security Act, currently referred to as FICA, was amended in 1956 to create the Disability Insurance (DI) Trust Fund, so the first year of reporting for the Fund was 1957. The most recent year of data available is 2012. A summary of the Disability Insurance Trust Fund summarized by decade is presented in Table 1. The rates of withholding for FICA increased periodically from the inception of the program until 2000, when the rate became fixed at 6.2%. Likewise, the portion of the 6.2% that was deposited into the DI Fund varied, reaching a high of .94% from 1994-1996, then being reduced to a fixed .9% since 2000 (H.R. 4277, 1994). Of course the salary on which the FICA tax is based has increased each year and as of 2014 is \$117,000 (Schreiber, 2013).

As is clearly indicated by the Net Change column in Table 1, each decade saw Receipts in excess of Disbursements in varying amounts until the 2010's when there was a significant increase in Disbursements relative to Receipts. In order to investigate this in more detail, Table 2 was prepared on a year-by-year basis for the years 2007–2012. This includes the period mentioned earlier when the rate of DI applications increased by up to 32% in some states and 27% over all states.

Table 1
Disability Insurance Trust Fund by Decade (millions)

Decade	Receipts	Disbursements	Net Change	Asset Balance
1950's*	\$2,630	\$805	\$1,825	\$1,825
1960's	18,615	16,340	2,275	4,100
1970's	84,960	83,430	1,530	5,630
1980's	198,192	195,917	2,275	7,905
1990's	487,556	398,140	89,416	97,321
2000's	957,691	851,472	106,229	203,550
2010's**	319,408	400,292	-80,884	122,666

*1950's includes 1957-1959

**2010's includes 2010-2012

<link href="/framework/css/noscript.css" rel="stylesheet" media="all"/>

Per Table 2, Disbursements in excess of Receipts began in 2009, and the negative spread between the two continues to increase each year. This appears to be due to the impact of two major events—the lingering recession in which unemployment benefits ran out for many former workers and the implementation of electronic claims processing as well as DI benefit modeling by the DDS. The loss of unemployment benefits in a lingering recession and a potential link of that loss of benefits to DI fraud will be discussed in the next section of this paper.

Table 2
Disability Insurance Trust Fund 2007-2012 (millions)

Decade	Receipts	Disbursements	Net Change	Asset Balance
2007	\$109,854	\$98,778	\$11,076	\$214,884
2008	109,840	108,951	889	215,773
2009	109,283	121,506	-12,223	203,550
2010	104,017	127,660	-23,643	179,907
2011	106,276	132,333	-26,057	153,850
2012	109,115	140,299	-31,184	122,666

(link href="/framework/css/noscript.css"rel="stylesheet"media="all=/) at January 2014.

Per Table 2, the Fund Disbursements increased 10% from 2007 to 2008 and another 12% from 2008 to 2009. These increases would have been difficult enough for the Fund to absorb with no other impacts, but because of the extended recessionary period in which there were fewer workers paying FICA tax, the Fund Receipts decreased at the same time. This compound effect on the Fund is devastating, causing the Asset Balance to drop by 42.9% in just 6 years from 2007 to 2012. Although 2012 shows a slight upturn in Receipts, the increase in Disbursements is substantially greater, causing the largest single year deficit, \$31,184 million, to date. At this rate, the Asset Balance of the Fund could be exhausted within the next 4 years.

Suspicion of Fraud in the Disability Insurance Program

Perhaps some people, such as auditors and fraud examiners, are more suspicious because of their professional training, while others may become suspicious when what they see happening around them is not in agreement with what they are told by their government. For example, have you ever personally known a person who is receiving DI benefits, but when you observe that person's behavior, they do not truly seem to be disabled? Do you think your impressions are an anomaly? One of the authors put this scenario to the test. She conducted an unscientific survey recently by asking friends, students, and acquaintances about this, and thus, confirming her opinion that it is a hot topic. Everyone has an opinion—more negative than positive. A point of common agreement is that those who truly deserve DI benefits should receive them. Beyond that, feedback ranged from distrust with the way the current system is managed to outright anger that individuals who were “fully able to work like the rest of us,” were living off DI benefits, costing taxpayers, and committing fraud while doing so.

Lawyers Specializing in Disability Insurance Claims

It is an everyday thing that when watching TV and it's time for a commercial, there is an advertisement by an attorney or a law firm who claims to specialize in Social Security Disability law. A bi-line from just such an ad by a law firm in the local viewing area of one of the authors is, “Social Security Disability—it's what we do, and all we do.” Another law firm who claims to only deal with DI cases cites credentials such as being a “Registered Nurse and an Attorney—let us help you.” One does not have to listen too long to hear similar examples in other television viewing areas. One thing is a certainty, if attorneys were not earning sufficient profits to make their practices worthwhile by dealing solely in DI cases, they would change their specialty.

60 Minutes Show on October 6, 2013

In October of 2013, 60 Minutes, a popular news show, reported concerns about suspected and alleged abuses of the Social Security DI program. The broadcast reported that there has been a 20 percent increase in beneficiaries over the past six years, and it is a “secret welfare system” (Kroft, 2013). The show also questioned the involvement of attorneys to obtain disability payments, and quoted Marilyn Zahm, “In 1971, fewer than 20 percent of claimants were

represented. Now, over 80 percent of claimants are represented by attorneys or representatives.” Additionally, a suspected scam was described where an attorney and doctors worked together to qualify clients for disability payments. Specialists who were well-versed in the DI approval process were hired to “coach” their clients on how to respond to tests and questions during the qualification process. The Social Security Administration was quoted as responding that “the explosive surge is due to gaining Baby Boomers and lingering effects of a bad economy.” This lends support to the rationale in this paper. Those two facts alone to not cause people to become disabled.

NYC Public Workers

Television, as well as electronic and print news reported in early 2014, that New York City police officers, firefighters and prison guards were charged with faking psychiatric and other medical problems to get DI benefits. Workers were coached on how to describe symptoms that allowed them to get payouts as high as \$500,000. The ringleaders made tens of thousands of dollars in kickbacks. Those arrested included 72 city police officers, eight firefighters, and five corrections officers. The scam was reported to have started more than twenty years ago. According to reports, many of those involved did have disabilities that entitled them to state disability pensions, but not DI. Over 100 defendants were charged with crimes including grand larceny (CBS/AP, 2014).

Defense of the SSA Regarding Disability Insurance

Not everyone believes that fraud is to blame for the state of the Fund. Economist Dean Baker challenges these claims of rampant fraud saying, “Close to three quarters of applicants are turned down initially and even after appeal, 70 percent of applicants are denied benefits” (Baker, 2013). Further, the Consortium for Citizens with Disabilities wrote a letter to CBS (Hart, 2013): “The Social Security disability standard is incredibly strict, and just four in 10 applicants are awarded benefits. Award rates have further declined during the recent economic downturn. Demonstrating eligibility requires extensive medical evidence, and even people with life-threatening illnesses can wait months if not years to receive benefits. Many individuals are denied despite significant disabilities and chronic illnesses.”

According to a 2012 study by University of Michigan researchers, the Social Security Disability Insurance (SSDI) case load has tripled over the past twenty years while the employment rate of disabled workers has decreased by 50 percent (Maestas, Mullen, & Strand, 2012). During this same time frame, life expectancy increased (Christensen, Doblhammer, Rau, & Vaupel, 2009), the working-age populations’ health remained constant (Burkhouser & Daly, 2011), and physical demands of jobs has decreased (Autor & Duggan, 2003).

Deterrents to Fraud

Detection

In their January, 2014, Audit Report Summary, the Office of the Inspector General (OIG) found that there were approximately 2,747 Social Security Administration (SSA) beneficiaries who were paid amounts in excess of what Federal limits indicate they should have been paid.

These findings were reported to the SSA on September 27, 2013. Included were 152 concurrent beneficiaries who were previously reported to the SSA as having been overpaid. The SSA reported that they had taken care of the errors in 2011; however, the overpayments continue to be made through the date of this citation in September, 2013. Although this is a single month's audit report, it is an example of a broken system. An audit system is in place as it should be. Formal audits are conducted and reported, but many of the problems are not fixed, so taxpayer monies are wasted.

Prevention

Sec. 1632. [42 U.S.C. 1383a] of the SSA sets forth Penalties for Fraud against the Social Security System. In essence, if anyone “knowingly and willfully” provides, or causes to be provided, false information of a material fact to the SSA in order to receive benefits, they are to be fined under title 18, United States Code, imprisoned not more than 5 years, or both. In addition, anyone convicted of this violation may not be certified as a representative payee under section 1631(a)(2), meaning that they cannot be designated to be paid SS benefits on behalf of anyone else.

Perhaps a new tool should be made available to SSA auditors under the authority of the OIG—the “electronic modeling system” used by the DDS to determine DI applicants who are likely to be approved for benefits. Auditors should be allowed to audit inside the electronic system. With the plethora of personal information there, an opportunity exists for identity theft and any number of violations of privacy or misuse of the information. It is also clear that by placing the modeling criteria within reach of those interested in perpetrating a fraud, the level of risk increases significantly.

References

- Actuary, O. o. (2009, November 12). *Disability Insurance Trust Fund*. Retrieved January 20, 2014, from Social Security Online Trust Fund Data: <http://www.ssa.gov/oact/ProgData/describedi.html>
- Adair, W. (2003). Integrative sequences and negotiation outcome in same and mixed culture negotiations. *The International Journal of Conflict Management*, 14(3), 273-296.
- Adair, W., & Bret, J. M. (2004). Culture and Negotiation Process. In M. J. Gelfand, & J. M. Bret, *The Handbook on Negotiation and Culture* (pp. 158-176). Stanford: Stanford Business Books.
- Adair, W., Brett, J. M., & Okumura, T. (2001). Negotiation behavior when cultures collide: The United States and Japan. *Journal of Applied Psychology*, 86(3), 371-385.
- Adler, N. J., & Graham, J. L. (1989). Cross-Cultural Interaction: The International Comparison Fallacy? *Journal of International Business Studies*, 515-537.
- Administration, S. S. (n.d.). *Disability Evaluation Under Social Security*. Retrieved January 20, 2014, from Social Security.
- Ang, S., & Van Dyne, L. (2008). Conceptualization of Cultural Intelligence. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence* (pp. 3-15). Armonk: M.E. Sharpe.

- Ang, S., Van Dyne, L., & Tan, M. L. (2011). Cultural Intelligence. In R. J. Sternberg, & S. B. Kaufman, *Cambridge Handbook on Intelligence* (pp. 582-601). Cambridge: Cambridge University Press.
- Ang, S., Van Dyne, L., Koh, C., Ng, .. Y., Templer, K. J., Tay, C., et al. (2007). Cultural Intelligence: Its Measurement and Effects on Cultural Judgment and Decision Making, Cultural Adaptation, and Task Performance. *Management and Organization Review*, 3(03), 335-371.
- Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Telpler, K. J., Tay, C., et al. (2007). Cultural Intelligence: It's measurement and Effects on Cultural Judgement and Decision Making, Cultural Adaption and Task Performance. *Management and Organization*, 3(3), 335-371.
- Audit, T. O. (2013). *The Social Security Administration's Reporting of High-dollar Overpayments Under Executive Order 13520 in Fiscal Year 2013*. Baltimore, MD: Office of the Inspector General.
- Autor, D., & Duggan, M. (2003). The Rise in the Disability Rolls and the Decline in Unemployment. *Quarterly Journal of Economics*, 157-206.
- Baker, D. (2013, October 6). *CBS News 60 Minutes Joins the Disability Bashing Bandwagon*. Retrieved January 20, 2014, from Center for Economic and Policy Research: <http://www.cepr.net/index.php/blogs/beat-the-press/cbs-news-60-minutes-joins-the-disability-bashing-bandwagon>
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W.H.Freeman.
- Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology*, 52, 1-26.
- Benoiel, M. (2011). *Negotiation Excellence: Successful Deal Making*. Singapore: World Scientific Publishing.
- Brislin, R., Worthley, R., & MacNab, B. (2006). Cultural Intelligence: Understanding Behaviors That Serve People's Goals. *Group Organizational Management*, 31(1), 40-55.
- Burkhouser, R., & Daly, M. (2011). *The Declining Work and Welfare of People with Disabilities: What Went Wrong and a Strategy for Change*. Washington, DC: AEI Press.
- CBS/AP. (2014, January 7). *Cops, firefighters among 100 former NYC workers charged in disability scam*. Retrieved January 18, 2014, from CBSNews.com: <http://www.cbsnews.com/news/100-nyc-workers-charged-in-disability-scam/>
- Christensen, K., Doblhammer, G., Rau, R., & Vaupel, J. W. (2009). Ageing Populations: The Challenges Ahead. *Lancet*, 1196-208.
- Chua, R. Y., Morris, M. W., & Mor, S. (2012). Collaborating across Cultures: Cultural Metacognition & Affect-Based Trust in Creative Collaboration. *Organizational Behavior and Human Decision Processes*, In press.
- Chung, M., & Ingleby, R. (2011). The applicability of Western socio-legal frameworks to the study of negotiation in Chinese society. *Journal of Higher Education Policy and Management*, 169-177.

- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences* (3rd ed.). New Jersey: Erlbaum.
- Cole, N. D. (2011). Managing global talent: solving the spousal adjustment problem. *The International Journal of Human Resource Management*, 1504-1530.
- Cole, N., & McNulty, Y. (2011). Why do female expatriates "fit-in" better than males? *Cross Cultural Management: An International Journal*, 144-164.
- Creswell, J. (2003). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches* (2 ed.). Thousand Oaks: Sage.
- Curhan, J. R., Elfenbein, H. A., & Xu, H. (2006). What Do People Value When They Negotiate? Mapping the Domain of Subjective Value in Negotiation. *Journal of Personality and Social Psychology*, 493-512.
- DeDreu, C., Weingart, L., & Kwon, S. (2000). Influence of social motives on integrative negotiation: A meta-analytic review and test of two theories. *Journal of Personality and Social Psychology*, 78, 889-905.
- Earley, P., & Ang, S. (2003). *Cultural Intelligence: Individual interactions across cultures*. Palo Alto: Oxford University Press.
- Early, P. C., Ang, S., & Tan, J. (2006). *Developing Cultural Intelligence at Work*. Stanford, CA: Stanford Business Books.
- Fisher, R., Ury, W., & Patton, B. (1991). *Getting to Yes: Negotiating agreement without giving in* (2nd ed.). New York: Penguin.
- Flavell, J. (1979). Metacognition and cognitive monitoring: A new era of cognitive-developmental inquiry. *American Psychologist*, 34(10), 906-911.
- Galinsky, A. D., Seiden, V. L., Kim, P. H., & Medvec, V. H. (2002). The Dissatisfaction of Having Your First Offer Accepted: The Role of Counterfactual Thinking in Negotiations. *Personality and Social Psychology Bulletin*, 271-283.
- Gelfand, M. J., & Brett, J. M. (2004). *The Handbook of Negotiation and Culture*. Stanford: Stanford University Press.
- Gelfand, M. J., & Christakopoulou, S. (1999). Culture and Negotiator Cognition: Judgment Accuracy and Negotiation Processes in Individualistic and Collectivistic Cultures. *Organizational Behavior and Human Decision Processes*, 79, 248-269.
- Gelfand, M., Imai, L., & Fehr, R. (2008). Thinking Intelligently About Cultural Intelligence. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement, and Applications* (pp. 375-387). Armonk: M.E. Sharpe.
- Graham, J. L. (1985). Cross-Cultural Marketing Negotiations. *Marketing Science*, 130-146.
- Graham, J. L. (1985). Cross-Cultural Marketing Negotiations. *Marketing Science*, 130-146.
- Graham, J. L., Mintu, A. T., & Rodgers, W. (1994). Explorations of Negotiation Behaviors in Ten Foreign Cultures Using a Model Developed in the United States. *Management Science*, 72-95.
- Hall, E. T. (1959). *The Silent Language*. New York: Doubleday.

- Halpert, J. A., Stuhlmacher, A. F., Crenshaw, J. L., Licher, C. D., & Bortel, R. (2010). Paths to Negotiation Success. *Negotiation and Conflict Management Research*, 91-116.
- Hart, P. (2013, October 7). *What Did 60 Minutes Get Wrong About Disability*. Retrieved January 20, 2014, from Fairness & Accuracy In Reporting: <http://www.fair.org/blog/2013/10/07/what-did-60-minutes-get-wrong-about-disability/>
- Imai, L., & Gelfand, M. (2009). Culture, conflict, and negotiation. In R. S. Bhagat, & R. M. Steers, *Cambridge Handbook of culture, organizations, and work* (pp. 339-372). Cambridge: Cambridge University Press.
- Imai, L., & Gelfand, M. J. (2009). Culture, conflict, and negotiation. In R. S. Bhagat, & R. M. Steers., *Cambridge Handbook of culture, organizations, and work* (pp. 334-372). Cambridge: University Press.
- Imai, L., & Gelfand, M. J. (2010). The culturally intelligent negotiator: The influence on Cultural Intelligence (CQ) on negotiation sequences and outcomes. *Organizational Behavior and Human Decision Processes*, In press.
- Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review." *Psychological bulletin* 127, no. 3 (2001): 376. *Psychological Bulletin*, 376-407.
- Kim, E.-M. (1998). *The four Asian tigers: economic development and the global political economy*. San Diego: Academic Press.
- Koneya, M., & Barbour, A. (1976). *Louder than words...Nonverbal communications*. Columbus: Merrill.
- Kroft, S. (2013, October 10). *60 Minutes*. Retrieved January 20, 2014, from CBSNews.com: <http://www.cbsnews.com/news/disability-usa/>
- Law, K. S., Wong, C.-S., & Song, L. J. (2004). The Construct and Criterion Validity of Emotional Intelligence and Its Potential Utility for Management Studies. *Journal of Applied Psychology*, 89(3), 483-496.
- Leung, K., Bhagat, R. S., Buchan, n. R., Erez, M., & Gibson, C. B. (2005). Culture and International Business: Recent Advances and Their Implications for Future Research. *Journal of International Business Studies*, 357-378.
- Lewicki, R., Barry, B., & Saunders, D. M. (2010). *Negotiation*. New York: McGraw Hill.
- Lewicki, R., Saunders, D., & Barry, B. (2006). *Negotiation*. Singapore: McGraw Hill.
- Lin, Y.-c., Chen, A. S.-y., & Song, Y.-c. (2012). Does your intelligence help to survive in a foreign jungle? The effects of cultural intelligence and emotional intelligence on cross-cultural adjustment. *International Journal of Intercultural Relations*, 541-552.
- Luo, Y., & Shenkar, O. (2002). *An empirical inquiry of negotiation effects in cross-cultural joint ventures* (Vol. 8). *Journal of International Management*.
- Maestas, N., Mullen, K., & Strand, A. (2012, August). Does Disability Insurance Receipt Discourage Work? Using Examiner Assignment to Estimate Causal Effects of SSDI Receipt. *Michigan Retirement Research Center*. Ann Arbor, Michigan: University of Michigan.

- Malek, M. A., & Budhwar, P. (2012). Cultural intelligence as a predictor of expatriate adjustment and performance in Malaysia. *Journal of World Business*, in press.
- Malhotra, D., & Bazerman, M. (2008). Psychological Influence in Negotiation: An Introduction Long Overdue. *Journal of Management*, 34(3), 509-531.
- Miles, M. (2003). Negotiating with the Chinese: Lessons from the Field. *Journal of Applied Behavioral Science*, 453-472.
- Morris, M. W., & Gelfand, M. J. (2004). Cultural Differences and Cognitive Dynamics: Expanding The Cognitive Perspective on Negotiation. In M. J. Gelfand, & J. M. Bret, *The Handbook of Negotiation and Culture* (pp. 45-70). Stanford: Stanford University Press.
- Nadler, J., Thompson, L., & Van Boven, L. (2003). Learning Negotiation Skills: Four Models of Knowledge Creation and Transfer. *Management Science*, 529-540.
- Pedersen, P. J. (2009). Assessing intercultural effectiveness outcomes in a year-long study abroad program. *International Journal of Intercultural Relations*, 70-80.
- Robbins, S. P., & Judge, T. A. (2009). *Organizational Behavior*. Upper Saddle River: Pearson.
- Ryan, R. M., & Deci, E. L. (2000). Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being. *American Psychologist*, 68-78.
- Salacuse, J. (1988). Making Deals in Strange Places. *Negotiation Journal*, 4(1), 5-13.
- Schneider, A. K. (2002). Shattering Negotiation Myths. *Harvard Negotiation Law Review*, 142-233.
- Sekaran, U. (2000). *Research Methods for Business* (3rd ed.). New York, NY: John Wiley and Sons.
- Shaffer, M. A., Ferzandi, L. A., Harrison, D. A., Gregersen, H., & Black, J. S. (2006). You can take it with you: Individual differences and expatriate effectiveness. *Journal of Applied Psychology*, 91, 109-125.
- Shaffer, M., & Miller, G. (2008). Cultural Intelligence: A Key Success Factor for Expatriates. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement and Applications* (pp. 107-125). Armonk: M.E. Sharpe.
- Simintiras, A., & Thomas, A. (1997). Cross Cultural Sales Negotiations. *International Marketing Review*, 10-28.
- Sternberg, R. J. (1999). Successful Intelligence: finding a balance. *Trends in Cognitive Science*, 3(11), 436-442.
- Sternberg, R. J., & Detterman, D. J. (1986). *What is intelligence: Contemporary viewpoints on its nature and definition*. Norwood, NJ: Ablex.
- Takeuchi, R. (2010). A Critical Review of Expatriate Adjustment Research Through a Multiple Stakeholder View: Progress, Emerging Trends, and Prospects. *Journal of Management*, 1040-1064.
- Templer, K. J., Tay, C., & Chandrasekar, N. A. (2006). Motivational Cultural Intelligence, Realistic Job Preview, Realistic Living Conditions Preview, and Cross Cultural Adjustment. *Group and Organizational Management*, 31(1).

- Thomas, D. C. (2006). Domain and Development of Cultural Intelligence: The Importance of Mindfulness. *Group and Organization Management*, 78-99.
- Thomas, D. C. (2009). *Cultural Intelligence living and working globally*. San Francisco: Berrett-Koehler.
- Thompson, L. L. (2009). *The Mind and Heart of the Negotiator*. Upper Saddle River: Prentice Hall.
- Triandis, H. (2006). Cultural Intelligence in Organizations. *Group and Organization Management*, 31(1), 20-26.
- United States Department of Agriculture. (2012, December 31). *International Macroeconomic Data Set*. Retrieved April 7, 2013, from USDA: <http://www.ers.usda.gov/data-products/international-macroeconomic-data-set.aspx>
- Van Dyne, L., Ang, S., & Koh, C. (2008). Development and Validation of the CQS. In S. Ang, & L. V. Dyne, *Handbook of Cultural Intelligence: Theory, Measurement, and Applications* (pp. 16-40). Armonk, NY: M.E.Sharpe.
- Vochita, L. (2008). The Role of Culture on International Negotiations. *Annals of the University of Petrosani*, 297-302.
- Weingart, L. R., & Olekalns, M. (2004). Communication Process in Negotiation. In M. J. Gelfand, & J. M. Brett, *The Handbook of Negotiation and Culture: Frequencies, Sequences, and Phases* (pp. 143-176). Stanford: Stanford University Press.
- Whetton, D. (2011). *Developing Management Skills*. NJ: Pearson.
- Wigfield, A., & Eccles, J. (2000). Expectancy-Value Theory of Achievement Motivation. *Contemporary Educational Psychology*, 25, 68-81.
- Wilken, R., Jacob, F., & Prime, N. (2013). The ambiguous role of cultural moderators in intercultural business negotiations. *International Business Review*, 736-753.
- Zhang, Y. (2012). Expatriate Development for Cross-Cultural Adjustment: Effects of Cultural Distance and Cultural Intelligence. *Human Resource Development Review*, 177-199.

THE CFO'S ROLE IN THE NORTH AMERICAN DIVISION:

**A CRITICAL EXAMINATION OF PERCEIVED DIFFERENCES AMONG
SDA LOCAL CONFERENCE LEADERSHIP**

ABSTRACT

The basis of this study was incited by the sentiment that Seventh-day Adventist (SDA) Conference leaders' perceptions of the Chief Financial Officer significantly impacts how CFOs function in their role. Data were collected from a purposeful sample of N=399 at fifty-seven SDA Local Conferences in the North American Division territory comprising the countries of Bermuda, Canada and The United States of America. A Mixed-Methods sequential exploratory research design utilizing Descriptive Statistics reflected significant differences among the conference leaders consisting of presidents {CEOs}, treasurers {CFO}, and board members {BM}, concerning their understanding and working knowledge of the CFO's role. Discussion and Conclusions include potential conflicting leadership expectations of the CFO's role, and possible organizational inefficiency. Implications are applicable to organizations where leadership expectations of the CFO's role are not clearly defined, communicated or understood. Some practical implications are also identified and discussed.

KEYWORDS: Board Members {BM}, CEO (Chief Executive Officer/President {P}), CFO (Chief Financial Officer/Treasurer {T}), communication, congruence, expectations, leadership, North American Division (NAD), perceptions, role, Seventh-day Adventists (SDA), understanding, working knowledge

INTRODUCTION and LITERATURE

The emergence of the Seventh-day Adventist Church as a global financial organization operating in multiple countries, industries and business sectors has necessitated the emergence and development of skilled financial leadership that add substantial value to the organization (Adventist World – NAD 2013; Corson and Miyagawa, 2012; Menkes, 2011; Witzel, 2010; Voogt, 2010; Shepherd, 2010). As reflected in the changing structure of the SDA church to accommodate its services in a changing world, so the role of the SDA treasurer as CFO has appeared to change. However, it is not clear whether the expectations (Buckingham and Coffman, 1999) and perceptions of the treasurer's role as the CFO in Seventh-day Adventist Church local conferences are understood by conference leadership (executive officers and board

members) to the extent of leadership counterparts in the business and non-business sector. The treasurer's role does not seem to be as clearly defined or understood among the leadership team.

The CFO represents the highest level of fiscal leadership and financial management service in the business sector (Witzel, 2010). Treasurers in Adventist local conferences occupy positions that function in a similar capacity to CFOs in other not-for-profit and for-profit organizations. The SDA Accounting Manual (2011) states, pertaining to the CFO, "various job title, such as Treasurer, Controller, or Vice-president for Finance are used throughout the world to refer to the individual who has been given primary responsibility for the financial affairs of an entity" (p.4). Adventist local conferences are directly impacted by the changes in our global societies, and treasurers are expected to navigate their organization financially during these changing times ((Hollein, M. 2013; Vallario, 2011; Quinn, 2011). Additionally, the expectations and perceptions of the treasurer's role serving in the Seventh-day Adventist Church is changing as a result of re-engineering in organizational designs; a re-focusing of mission and purpose; the accumulation of assets in properties, plant and equipment; and the allocation and management of fiscal resources. In spite of these changes, there appears to be a significant lag in responding to the changes associated with the treasurer's role in comparison to the corporate sector as it relates to establishing defined expectations and policies. For example, the Adventist system continues to define the function for the conference treasurer with policy statements emphasizing accounting, managing, and reporting of funds (SDA Accounting Manual, 2011). In lieu of the evidence of evolving CFO roles in non-Adventist organizations, this research explores and answers the questions of has the treasurer's role in Adventist local conferences changed? Is there a "tacit" knowledge about how treasurers do their work? Are the perceived expectations of the treasurer's role congruent among the leadership (president, treasurer and board members)?

The CFO's role facilitates and necessitates a wide spectrum of relationships within the context of internal and external stakeholders comprising the financial community that are impacted by the organization's financial resources (de Jongh and Wielinga, 2011; Drucker, 1974; PricewaterhouseCoopers, 1999). A crucial component to the fulfillment of the organization's mission is the CFO's relationship with the chief executive officer and executive board as members of the organization's leadership team (Menkes, 2011; Carver, 1997; Gray, 1998). In many organizations CFOs and CEOs serve together as executive officers and business partners providing each other leadership and support to ensure the organization fulfills its mission and achieves its strategic goals and objectives (MacManus, 2011; Cardillo, 1998; Hartman, 2000). While expectations and perceptions of leadership may differ in some cases, it is vital to the organization's climate for CEOs and CFOs to communicate and work together, avoiding adverse relationships, to maximize the business operationalization of shareholder's value and stakeholder's interest (Shepherd, 2010; Krell, 2003; Millman, 2001). CFO's have also encountered a number of complex challenges as financial leaders due to multiple internal and external environmental factors (Corson and Miyagawa, 2012; Spanyl, 2011) such as changes to business structure (Tenkate, 2006), regulatory laws and Sarbanes-Oxley Act of 2002 (Linden,

2012; Ehrenhalt and Ryan, 2007; Tenkate, 2006; Swanson, 2007; Couto and Neilson, 2004; Strategic Direction, 2004), transitions in technology (Tenkate, 2006), domino effect of unemployment (Heffes, 2009), and organizational resources (Cunningham, 2005).

Witzel (2010) identified a comprehensive global study that was released by IBM involving a survey and interview of more than 1,900 of chief financial officers measuring CFO's attitudes and practices. According to Zorn (2004), studies such as the one conducted by IBM in 2010 expands on prior studies of 400 large organization between 1964 and 2000 which laid the foundation for two primary theories on the transformation of financial controls which propelled the rise of treasurers to the rank of a CFO in the business sector. Zorn's research on the rise of the CFO in the American firm noted that several existing studies offered explanations pertaining to the evolution of the CFO position, but the theories of "The Capital-Dependence Thesis" and "Fligstein's Theory of Conceptions of Control" represented the most significant models (Zorn, 2004).

Zorn (2004), stated that "The Capital-dependence theory, thus post that conditions in the firms' environment that determine access to capital, together with firm-specific capitalization characteristic, account for changes in organizational form in general and for adaptations in financial control systems in particular". Prechel (2000, 1991) building on the Capital-dependence theory "presented a theory of change in the corporate form that centered on the political economy concept of capital and capital accumulation....It follows from this theoretical perspective that firms experiencing a capital crisis should be particularly susceptible to elevating the finance manager to the rank of a CFO." In Fligstein's theory of conceptions of control examines, his model denotes "corporate structures and strategies are the products of firms' institutional environments and the power struggle among different management factors each seeking to gain control of the large corporation" (Zorn, 2004). In each situation, the CFO is challenged to provide financial leaderships and regulate controls pertaining to the function of the position.

METHODOLOGY

Research Design

This study uses a mixed methods research design (Creswell, 2014). Creswell (2003) "defines mixed methods research by incorporating the definition that focuses on collecting and analyzing both quantitative and qualitative data in a single study" (p. 210). Thus, a sequential exploratory design involving qualitative (Eriksson and Kovalainen, 2008; Nardi, 2003) and quantitative (Elsbach and Bechky, 2009) methods was utilized in the collection and analysis of the data.

Sampling

The qualitative phase of this study consisted of two phases. First, an "Exemplary Local Conference Form" was developed and distributed to those serving as "experts" (Presidents and Treasurers) in the Division and Union levels of the Seventh-day Adventist Church representing higher governing organizations in the Adventist system. The purpose of this form was to gather opinions from the "experts" on the identification of "exemplary" local conferences in their division and union territories consisting of Bermuda, Canada and The United States of America. These higher level organizations (Division and Union) represents the local conference governing entities in which they are reportable to in their operations and evaluations.

The "experts" were asked to establish and report their own criteria for an "exemplary conference" on the form. The "experts" consisted of 10 presidents (CEOs) and 10 treasurers (CFOs). Ninety percent (90%) of the presidents, and one-hundred percent (100%) of the treasurers responded to the instrument form pertaining to exemplary conferences. The selection procedure of the division, union, and conference participants resulted in a non-probability sampling approach which, according to Chien (as cited by Merriam, 1998, p. 61), is called "purposive," and Patton (as cited by Merriam, 1998, p. 61) calls it "purposeful." In-depth, face-to-face interviews pertaining to the role of the treasurer were conducted with the presidents and treasurers in the exemplary conferences on-site.

Secondly, an "interview questionnaire instrument" was developed for local conferences participants' that were identified by the "experts" as an "exemplary conference". Four local conferences were purposefully selected from the list of exemplary local conferences identified by the "experts". Four presidents and four treasurers of the exemplary local conferences selected for the study were interviewed with the purpose of capturing the "lived experience" (Eisner, 1998) of individuals working in the area of this study as participants.

In the quantitative phase of the study, a survey questionnaire was developed from the qualitative research interview data collected and analyzed from the presidents and treasurers of four conferences that were identified as an "exemplary conference" by the "experts". The survey questionnaire was developed to determine the level of agreement or disagreement the other presidents, treasurers and board members had pertaining from the qualitative data collected from the "exemplary conference" presidents and treasurers which was used to formulate the survey questions. Surveys were mailed to a total population of 399 individuals in local conferences throughout the North American Division territory (Bermuda, Canada, and The United States of America) consisting of 57 presidents, 57 treasurers and 285 board members. Two hundred and eighteen (218) participants (55 percent of the total sample) completed and returned the research instruments. These respondents included 35 (61%) presidents, 39 (68%) treasurers, and 144 (50%) board members.

Data Collections

Data was collected in three phases: first, mailing of "Exemplary Conference Form"; second, interviewing of participants (qualitative); and third, mailing of survey questionnaires (quantitative) to the sample population, using a sequential exploratory strategy model as part of the mixed methods research design. Strategies to collect data, such as extensive interviews of participant's phenomenon, observations and surveys were identified as well as factors that could influence data collection (Creswell, 2014 and 2003; Elsbach and Bechky, 2009; Eriksson and Kovalainen, 2008; Nardi, 2003; McMillian and Schumacher, 2001; Posavac and Carey, 1997; Sternberg, 1981).

Statistical Techniques

In this study both qualitative and quantitative data were collected and analyzed. Pertaining to the qualitative technique, some of the major challenges resulting from the data collected involved analyzing the data to identify emerging categories and patterns, and seeking to understand the data (Creswell, 2014; McMillan and Schumacher, 2001; Rudestam and Newton, 1992). To facilitate the process of inductive data analysis, a system of organization was developed to manage the data collected from interview transcripts. After completing the interview transcripts, each response to each question was carefully read, analyzed, coded and categorized. Wide categories and patterns were developed, and then narrowed into emerging themes that corresponded to the research study questions.

Pertaining to the quantitative technique; Analysis of Variance (ANOVA) and Chi-Square statistical data analysis were used to process and interpret the survey questionnaires. The Likert Scale (Tharenou, Donohue and Cooper, 2007) was used as a survey response from the participants to measure the degree of agreement from strongly disagree (1) to strongly agree (5). Descriptive statistics were used to analyze the survey data. Student-Newman-Keuls Post-Hoc Test were used to analyze and denote pairs and reflect significant differences among the groups. In quantitative research, random selectivity from a sample to a population to generalize was the critical factor (Tharenou, Donohue and Cooper, 2007; Nardi, 2003; Drisko, 1997; Eisner, 1998; Patten, 2000). The random selection of the executive board members from each local conference in the North American Division enhanced generalization of the results of this research to the population.

RESULTS

Qualitative Analysis

The interview results from the presidents and treasurers from the four exemplary conferences selected in this study indicate that they had some differing perspectives on the past roles of the treasurer. The results indicate that all four of the treasurers and two of the presidents shared the same perspective that the current role of the treasurer is to "manage the accounting and finances"

of the organization. An analysis of the results of future roles indicated that presidents and treasurers, as individual groups, did not share any of the same perspectives in future roles.

Quantitative Analysis

The results and analysis of this research highlights that significant perspective differences exist among NAD local conference leadership pertaining to presidents, treasurers and board members concerning their level of understanding and working knowledge of the nature and work performed by treasurers in their local conferences. These significant differences existed in their perception of the role of the treasurer being clearly defined and documented in their conference. A segment of the research question is expressed in the following manner pertaining to this topic: Is there congruence between the perceptions of the presidents, treasurers, and board members as they relate to the roles, responsibilities, and relationships of the treasurer are understood? The level of congruence is expressed in the mean (*M*) between the three groups.

The three groups tended not to agree on whether the treasurer’s role (presidents, *M*=3.71; treasurers, *M*=3.10; and board members, *M*=3.55) are clearly defined in the organization’s policies and job descriptions. Pertaining to the role of the treasurer, the Student-Newman-Keuls Post-Hoc Test (Table 1) indicated that the treasurers responded to this expectation significantly lower than the board members and the presidents, but there was no significant difference between the responses of the board members and presidents.

Table 1

Student-Newman-Keuls Test for Clearly Defined Role in Conference

Position	<i>N</i>	<i>M</i>	Treasurer Board President
Treasurer	39	3.10	
Board	143	3.55	*
President	35	3.71	*

* Denotes pairs of groups significant difference at the 0.5 level

The three groups tended not to agree on whether they understood and have a working knowledge of the roles (president, *M*=4.38; treasurers, *M*=4.18; board members *M*=3.74) in their local conference. Pertaining to the role of the treasurer, the Student-Newman-Keuls Post-Hoc Test (Table 2) indicated that the board members responded to this expectation significantly lower

than the treasurers' and presidents', but there is no significant difference between the responses of the treasurers and presidents

Table 2

Student-Newman-Keuls Test for Understanding and Working Knowledge of Role

Position	<i>N</i>	<i>M</i>	Board	Treasurer	President
Board	144	3.74			
Treasurer	39	4.18	*		
President	34	4.38	*	*	

* Denotes pairs of groups significant difference at the 0.5 level

In spite of the significant differences between the presidents, treasurers, and board members pertaining to their level of understanding, and having a working knowledge of the treasurer's role in their local conference; all of the groups believed that the expected roles of the treasurer are clearly defined in the Seventh-day Adventist North American Division (NAD) and General Conference (GC) policy books.

IMPLICATIONS and CONCLUSIONS

Striking significant implications emerge in light of the findings of this study. Pertaining to the quantitative survey questionnaires that were distributed to the NAD local conference presidents, treasurers and board members, the presidents' response appears to reflect their having a higher level of understanding and working knowledge of the treasurer's role than the treasurers who "actually occupy the position and do the work". The treasurers clearly did not perceive their roles ($M=3.10$) as clearly as presidents ($M=3.71$) as indicated by lower means. This lack of agreement could create misunderstandings between the two (presidents and treasurers) as well as conflict in the leadership team. If the expectation of the treasurer are not clearly defined and understood by presidents, treasurers, and board members; then there is a potential for confusion of expectations, loss productivity, and inter-relational conflicts between the treasurer, president and governing board members in the organization.

Because the board members ($M=3.74$) are less confident than the presidents ($M=4.38$) and treasurers ($M=4.38$) of their understanding of the treasurers' role it may be helpful to have

training sessions to orientate and provide a clearer understanding of the treasurer's work. These strategies may enhance and promote organizational effectiveness in ensuring that the leadership team fulfills the organization's mission while fostering greater accountability and corporate governance.

Overall, the study showed that the presidents and treasurers in the Adventist system were more in agreement than the treasurers and board members regarding the work. This seems to indicate that the closer the groups work together, the more in agreement their perceptions and expectations may be. Failure to clarify expectations can potentially result in problems that may hinder the achievement of organizational goals and objectives, and create conflicting partnerships and relationships between presidents, treasurers, and board members. Similar outcomes and impact of expectations may exist in other organizations, regardless of industry or sector, where expectations of the CFOs' role are not clearly defined, communicated or understood leading to potential leadership conflict, declining CFO performance and organizational operational inefficiency.

Therefore, the role of the treasurer as the CFO should be clearly defined, documented, and communicated in the policies of the governing organizations on all levels of the SDA church system. Policies regarding the treasurer's work should be updated to reflect the current understanding of presidents, treasurers, and board members and other key leaders in the organization. Change is to be expected and implemented to ensure that best practices among treasurers are realized in local conferences. Treasurers may consider, and explore the possibilities of discussing their role with presidents and board members to clarify expectations, definitions and understanding before assuming the position as a potentially new hire in the organization

REFERENCES

- Adventist World – NAD (2013, June). "Treasurer says north American tithe up 1 percent, 4.4 percent in other regions. p. 5.
- Buckingham, M. and Coffman, C. (1999). *First break all the rules: What the world's greatest managers do differently*. New York: Simon & Schuster.
- Cardillo, R.C. (1998, January/February). The triangle at the top: When the CFO gets stuck between the CEO and the president, who wins. *Financial Executive*, 14, 49-50.
- Carver, J. (1997). *Boards that make a difference*. San Francisco, CA: Jossey-Bass.
- Couto, V and Neilson, G. (2004, December). *Financial Executive*. 20.9: 40-42.

- Creswell, J. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches* (2nd ed.). Thousand Oaks, CA: Sage.
- Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Corson, M. and Miyagawa, T. (2012). Global cfo from scorekeeper to strategist. *Financial Executive*, 28.9.
- Cunningham, C. (2005). CFO authenticity and the skills of leadership. *Financial Executive*. 21.3: 6.
- de Jongh, M. and Wielinga, C. (2011). Value creation and the dilemma of the cfo. *Credit Control*. 32.1/2: 33-36.
- Drisko, G. (1997). Strengthening qualitative studies and reports: Standards to promote academic integrity. *Journal of Social Work Education*, 33, 185-198.
- Drucker, P. (1974). *Management: Tasks, responsibilities, practices*. New York: HarperCollins.
- Ehrenhalt, S. and Ryan, D. (2007, July and August). CFO's mastering the four key roles. *Financial Executive*. 23.6: 56-58.
- Eisner, E.W. (1998). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. Upper Saddle River, NJ: Prentice-Hall.
- Elsbach, K.D. and Bechky, B.A. (2009). *Qualitative Organizational Research* (Vol. 2). Charlotte, NC. Information Age Publishing, Inc.
- Eriksson P. and Kovalainen, A. (2008). *Qualitative Methods in Business Research*. Thousand Oaks, CA: Sage.
- Gray, C.L. (1998, November/December). The CFO and the board. *Financial Executive*, 14(6). 48-49.
- Hartman, L. (2000, November/December). Group process in executive leadership teams [Electronic version]. *Strategy & Leadership*, 28(6). 34-35.
- Heffes, E. (2009, April). Uncertain economy: what's a cfo to do? *Financial Executive*. 25.3: 18-21.
- Hollein, M. (2013, May). Leadership and the cfo. *Financial Executive*. 29.4.
- Krell, E. (2003, April). Finance executive: Career & compensation survey. *Business Finance*., 14, 16, 24.

- Linden, M. (2012, October). The modern-day CFO: Down to business. *Financial Executive*. 28.8: 49-51.
- MacManus, E. (2011, June). Ten questions for the aspiring cfo. *Accountancy Ireland*. 43.3: 29-31.
- McMillan, J.H., & Schumacher, S. (2001). *Research in education: A conceptual introduction* (5th ed.). New York: Addison Wesley Longhorn.
- Menkes, J. (2011, June). Learning how to lead as cfo. *Financial Executive*. 27.5:52-55.
- Merriam, S.B. (1998). *Qualitative research and case study applications in education: Revised and expanded from case study research in education*. San Francisco, CA: Jossey-Bass.
- Millman, G.J. (2001, December). Managing up: The CFO & board. *Financial Executive*, 17(9), 24-26.
- Nardi, P.M. (2003). *Doing Survey Research: A Guide to Quantitative Methods*. Boston, MA. Allyn and Bacon.
- Patten, M.L. (2000). *Understanding research methods: An overview of the essentials* (2nd ed.). Los Angeles, CA: Pyczak Publishing.
- Posavac, E.J., & Carey, R.G. (1997). *Program evaluation: Methods and case studies* (5th ed.). Upper Saddle River, NJ: Prentice-Hall.
- Prechel, Harland. (1991). Irrationality and contradiction in organizational change: Transformation in the corporate form of a u.s. steel corporation, 1930 – 1987. *Sociological Quarterly*. 32: 423-45.
- Prechel, Harland. (2000). *Big business and the state: Historical transitions and corporate transformation, 1880s -1990s*. Albany: State University of New York Press.
- PricewaterhouseCoopers. (1999). *CFO: Architect of the corporation's future*. New York: John Wiley & Sons.
- Quinn, M. (2011, June 27). CFO Network (A Special Report) ---What the CFOs: Their highest priorities involve giving themselves more strategic ---and more powerful--- roles. *Wall Street Journal*, Eastern edition. New York, NY. C.6.
- Rudestam, K.E., & Newton, R.R. (1992). *Surviving your dissertation: A comprehensive guide to content and process*. Newbury Park, CA: Sage.
- Seventh-day Adventist Accounting Manual, (2011 Edition/January). General Conference

of Seventh-day Adventists. Silver Spring, Maryland. p.4 -7.

Shepherd, N. (2010, May/June). The cfo as a business partner. *Cost Management*. 24.3: 30-38.

Spanyl, A. (2011, December). How to be a transformational cfo. *Strategic Finance*. 93.6: 29-33.

Sternberg, D. (1981). *How to complete and survive a doctoral dissertation*. New York, NY: St. Martin's Press.

Strategic Directions. (2004, March). The evolving role of the cfo. 20:3: 26-28.

Swanson, C. (2007, August). The cfo: Strategist or scorekeeper? *Oil and Gas Investor*. 27.8: 97-98.

Tenkate, S. (2006, October). What's to become of the cfo? *Intheblack*. 76.9: 13.

Tharenou, P, Donohue, R. and Cooper, B. (2007). *Management Research Methods*. New York, NY. Cambridge University Press.

Vallario, C.W. (2011, July/August). Path to the cfo suite. *Financial Executive*. 27.6: 26-29.

Voogt, T. (2010, September). The global financial crisis and top 40 company cfos. *Accountancy SA*. 14-16

Witzel, M. (2010, March/April). Time for change: The new role of the cfo. *Corporate Finance Review*. 14.5: 26-34.

Zorn, D. M. (2004, June). Here a chief, there a chief: The rise of the cfo in the american firm. *American Sociological Review*. 69.3:345-364.

SOBIE 2014

Table 1

Student-Newman-Keuls Test for Clearly Defined Role in Conference

Position	<i>N</i>	<i>M</i>	Treasurer Board President
Treasurer	39	3.10	
Board	143	3.55	*
President	35	3.71	*

* Denotes pairs of groups significant difference at the 0.5 level

Table 2

Student-Newman-Keuls Test for Understanding and Working Knowledge of Role

Position	<i>N</i>	<i>M</i>	Board Treasurer President
Board	144	3.74	
Treasurer	39	4.18	*
President	34	4.38	*

* Denotes pairs of groups significant difference at the 0.5 level

Study Abroad: Who goes, who stays and why

**David Deviney, Tarleton State University
 Tony Vrba, Regis University
 LaVelle Mills, West Texas A&M University
 Elizabeth Ball, Tarleton State University**

Abstract

In a partial response to the increased emphasis by business schools to integrate multicultural studies into their curriculums, faculty-led study abroad programs have grown in both frequency and duration. The research has shown that study abroad programs do show measurable gains in a student’s intellectual development. However, while the number of students participating in study abroad programs is increasing, the majority of the student population will not take advantage of these opportunities. The purpose of this research is to determine some of the factors that influence, both positively and negatively, a student’s participation decision. Students at two universities participated in the research.

Introduction

In the academic year 2011-2012 a little over 280,000 out of approximately 20,000,000 American college and university students participated in study abroad trips each year (NAFSA, n.d.). On the average, participation in study abroad is increasing at about two percent per year (Department of Education, n.d). The Institute of International Education (IIE) (2014) recently reports reported that the growth rate has increased to three percent in the most recent year. Table1 gives the growth rates since 1990 as reported by the Institute of International Education (2014).

Table 1 U. S. Students Studying Abroad for Academic Credit						
Year	89-90	95-96	99-00	03-04	07-08	11-12
Students Studying Abroad	71K	89K	144K	191K	262K	283K
"Institute of International Education. (2013).Open Doors Report on International Educational Exchange. Retrieved from http://www.iie.org/opendoors "						

While the numbers are increasing, the percentage of students that study abroad in long-term or short-term programs is relatively low. Colleges and universities continue to emphasize the importance of international studies (Relyea, Cocchiara & Studdard, 2008); however, Americans lag in international exposure (Bollag, 2003). The importance of study abroad as a key factor in affecting international understanding has been supported since the early 1930s (Meras, 1932). As noted by Spiering and Erickson, “Students can develop new perspectives on academic subjects and real-world issues, achieve proficiency in a foreign language, experience personal growth, and develop valuable career skills” (2006).

SOBIE 2014

Study abroad offers the ability to learn by doing, interact actively through a trial and error approach and deal with lots of information; all factors that have appeal to Millennial students (Williams, 2013).

The decision to study abroad can depend on the country selected. The IIE Open Doors Report (2014) indicated that the United Kingdom, Italy and Spain were host to 32% of American students. Table 2 provides a more comprehensive look at destinations of U. S. study abroad programs.

Country	Percentage
United Kingdom	12%
Italy	11%
Spain	9%
France	6%
China	5%
Australia	3%
Ireland	3%
Germany	3%
Costa Rica	3%
Japan	2%
Other	43%

"Institute of International Education. (2013). Open Doors Report on International Educational Exchange. Retrieved from <http://www.iie.org/opendoors>"

The report also suggests that 53% of all study abroad destinations are in Europe. The same report indicates that in the 2011-2012 academic year, American students traveling abroad comprised of 60% juniors and seniors, 64% were female and 76% were white. Hispanics and African-Americans accounted for approximately 13% of students studying abroad.

Factors influencing student decisions to study abroad are varied and have not been widely studied in the international business and study abroad literature. The limited research on this topic suggests that a student's intent to study abroad can be influenced by a number of factors, either real or perceived. Examples of factors influencing a student's decision regarding participation in study abroad include difficulty of transfer of credits, lack of faculty/campus support, lack of foreign language proficiency, students with certain majors, age of the student, students with disability, and cost (Stroud, 2010). One study of European students suggested that the potential impact on family and personal relationships was a significant component in a student's intention to study abroad (Souto-Otero, et al, 2013). Future job prospects, family expectations and administrative support are all significant factors in study abroad intentions (Schnusenberg, de Jong, & Goel, 2012).

The research on why students decide not to travel abroad is limited. The same factors that can influence one student to study abroad can influence another student not to study abroad. What causes one potential student to overcome either real or perceived factors related to study abroad and pursue an opportunity to study internationally may cause another potential study abroad student to view the same factors as insurmountable and choose not to participate.

A student's personality characteristics can have an impact on decisions to study abroad. While the research on personality characteristics as a predictor of a student propensity to study abroad is somewhat limited, one study found that extraversion was a factor in how beneficial study abroad was as a learning experience Miao & Harris (2012). Bakalis and Joiner (2004) identified students with a high tolerance for ambiguity and a high degree of openness as more likely to participate in study abroad activities while the opposite is true for students that scored low on these characteristics. Another research effort reported that extroverted-task oriented and introverted-relational students preferred study abroad more than introverted-task oriented and extroverted-relational students (Vrba, Mills, Deviney, & Ball, 2011).

The contribution to the literature of this paper is to look at personality and behavior characteristics of students in a selected group and explore how these similarities or differences may have impacted their decisions not to study abroad. The remainder of this study is organized as follows. The following section describes the instrument that was used to measure behavior tendencies of participants. The methodology is presented after that. Then we provide results of the study with related discussion.

Measurement of Behavioral Tendencies

The *Excellence for Learning – Student Version (DISC)* was used to measure each student's behavioral tendencies. This instrument was derived from William Marston and published in *The Emotions of Normal People* (1928). Bill Bonnstetter (Bonnstetter & Suiter, 2007) has completed considerable research and developed the DISC used in this research. The DISC report uses a four quadrant matrix with polar opposites: Task-Relational and Introvert-Extravert. The four quadrants are labeled D – Dominance, I – Influence, S – Steadiness and C – Compliance. The computer generated report categorizes students into 384 different behavioral styles (Bonnstetter & Suiter, 2007).

The four quadrants are defined as follows (Bonnstetter & Suiter, 2007):

Dominance. *Dominance style of behavior is direct and decisive. This individual feels that it is important to achieve goals, they do not need to be told what to do, and they set high standards. When projects take too long they grow impatient: they enjoy competition and want to win. They are sometimes blunt and come to the point directly. "D" individuals tend to be direct, controlling, risk-taking, pessimistic, judging, extroverted, change-oriented, and fight-oriented.*

Influencing. *The Influencing behavior style reflects outgoing, optimistic individuals who love to communicate, and are people persons. These individuals tend to participate in team and group activities; they like the limelight though may not want to lead. "I" individuals prefer to be direct, accepting, risk-taking, optimistic, perceiving, extroverted, change-oriented and flight-oriented.*

Steadiness. *The Steadiness behavior style shows sympathetic, cooperative behavior. Helping others and fitting in are important to these individuals though they are hesitant to implement change and do not like to be in the limelight. "S" individuals tend to be indirect, accepting, risk-assessing, optimistic, perceiving, introverted, continuity-oriented, and flight-oriented.*

***Compliance.** Compliance behavior style tends to be reliable and trustworthy. These individuals will plan out a strategy considering all the facts and possible malfunctions, and they prefer to work alone. “C” individuals prefer to be indirect, controlling, risk-assessing, pessimistic, judging, introverted, continuity-oriented, and fight-oriented.*

The reports students receive contains two graphs indicating his or her natural style and adapted style. Adapted style reflects how students are responding to his or her environment while the natural style reflects how they respond when the environment is not influencing behavior. It also reflects how they will respond when there is significant stress. As noted in Figure 1, the two graphs are labeled Graph 1 Adaptive and Graph 2 Natural. Also note that at the 50% mark there is a bold line called the Energy Line (Bonnstetter & Suiter, 2007). Students scoring above the Energy Line are considered to be high in that area. For example, refer to Figure 1. This particular student scored an 83 on the S component and 81 on the C component. The other two are below 50 therefore would not be considered as high. The S and C component both have a substantial influence on behavioral tendencies. It is important to note that a person is a combination of all four components. For purposes of this research, only the “high” components were observed since they are markedly impact behavior.

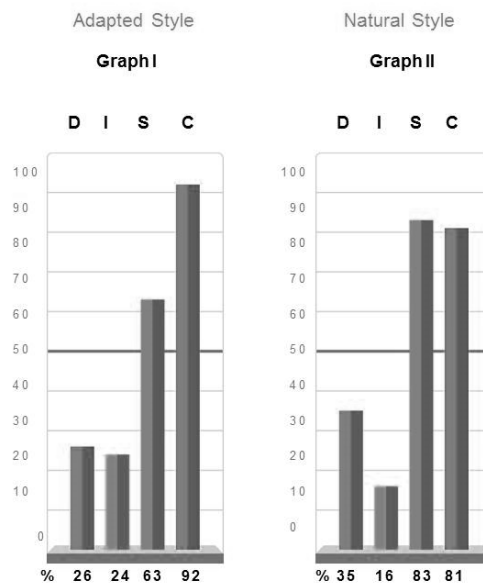


Figure 1: Adapted and Natural Style Graphs

Methodology

The purpose of this paper is to report on the descriptive data collected. Future research analysis will consider the statistical significance of study abroad intentions based on behavioral styles. The data collected in this survey involved several universities but the majority was collected from one major university in the southern mid-west of the United States. Students, both graduate and undergraduate, took part in the survey. While mostly business students were chosen, there were some students from other disciplines participating. Qualtrics was used to collect student information about intentions.

The *Excellence for Learning – Student Version (DISC)* was selected to measure student behavioral tendencies. This instrument is intended to measure the “how” about behavior and does not attempt to measure values or other personality characteristics. For example, it will measure how they communicate, introversion/extroversion, task/relational tendencies, tolerance for risk, level of optimism, behavioral adaption and other behaviors. The cost of the instruments was provided by a university grant.

Students taking the *Excellence for Learning – Student Version (DISC)* were provided with a report on his or her behavioral style. This report was used to determine the intensity and influence of the D, I, S and C on behavior. Figure2: Graph 2 Natural Behavior with Energy Line, was contained in the report and is an example of the graph from which data was extracted.

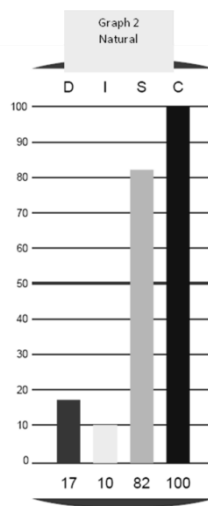


Figure 2: Graph Natural Behavior

with Energy Line

The vertical axes on Figure 1 and 2- range from 0 to 100. At 50% there is a bold line which is called the Energy Line. The distance above the energy line represents the intensity of the dimension to one’s behavioral style (Bonnstetter, 2006). As mentioned above, the makeup of a person’s behavioral style is a blend of all four dimensions (D, I, S and C). However, the fact that a person is above the energy line for a given dimension means that the dimension has a significant impact on his or her behavioral style.

There were 233 usable surveys extracted from the Qualtrics data reflecting student intentions. This was used to report some of the data. However, when merged with the DISC data, only 191 surveys were usable. This was used to report information about the behavioral tendencies.

Results and Discussion

Table 3 indicated the gender of those participating in the research. As noted, there was an almost even split between males and females. The research indicated that the percent of female students participating in study abroad programs outnumber male students, 64.8% to 35.2% respectively. (IIE, 2014).

Table 3: Gender

#	Answer	Response	%
1	Male	116	50%
2	Female	117	50%
	Total	233	100%

When asked if they would participate in a study abroad program (Table 4), a higher percentage of female students responded with a “yes.” Interestingly, male students were more definite in responding with a “no.” This would more closely align with the recent national data on who actually participates in study abroad programs. Table 4 Who Would Participate in Study Abroad by Gender

		Gender		
		Male	Female	Total
Would you participate in a Study Abroad Program if the opportunity presented itself?	Yes	36 41.9%	50 58.1%	86 100%
	No	32 74.4%	11 25.6%	43 100%
	Maybe	48 46.1%	56 53.9%	104 100%
	Total	116	117	233

As would be expected, the study consisted of mostly younger students below the age of 30 (Table 5).

SOBIE 2014

Table 5 Respondents Age

#	Answer	Response	%
1	22 or younger	114	49%
2	23-29	70	30%
3	30-39	24	10%
4	40-49	12	5%
5	50-59	9	4%
6	60 or older	4	2%
	Total	233	100%

When asked about the amount of hours worked, a little over half indicated they worked over 20 hours per week. As suggested in the literature review, personal obligations could have an unfavorable impact on any intentions to study abroad. Table 6 reflects the data when comparing the response to this question and their intentions to go on a study abroad program. Reviewing the percentages would suggest that those working over 40 hours per week would factor their work into their intentions to study abroad.

Table 6 Participation by Employment

		Would you participate in a Study Abroad Program if the opportunity presented itself?			Total
		Yes	No	Maybe	
In a typical week, how many hours do you work?	20 or less	30 29.41%	19 18.63%	53 51.96%	102
	21 to 30	24 48%	9 18%	17 34%	50
	31 to 40	21 43.75%	5 10.42%	22 45.83%	48
	More than 40	11 33.33%	10 30.3%	12 36.36%	33
	Total	86	43	104	233

Of the 233 respondents, only 37% (see Table 7) said they would go on a study abroad program. There was a high percentage of undecided.

Table 7 Study Abroad Participation

SOBIE 2014

#	Answer		Response	%
1	Yes		86	37%
2	No		43	18%
3	Maybe		104	45%
	Total		233	100%

When questioned about their apprehensions to participating in a study abroad program, the top three were cost; language differences; and safety/security. Table 8 reflects the complete list.

Table 8 Study Abroad Concerns

#	Answer		Response	%
1	Cost of the trip		188	81%
2	Distance from home		49	21%
3	Safety/Security		101	43%
4	Customs of the host country		48	21%
5	Traveling with people I don't know		43	18%
6	Flying on an airplane		23	10%
7	Language differences		114	49%
8	Other (please specify)		17	7%

Students were asked, “Assuming cost was not a limiting factor, in which of the following countries/locations would you be interested in doing a Study Abroad?” They could check all that would apply. The most popular destination was Australia 78% while only about 3% actually go there. Students indicated that Europe was another popular destination and this result aligns with the recent national data on destinations. Specifically, England was a popular destination as a student choice. Student data indicated that Brazil aligned with the national data. New Zealand was also a popular student choice. While the cost (Mercer, 2013) and flight time to Australia and New Zealand could be limiting to some students, it is a destination with strong student interest.

Table 9 Respondent Favored Destination

#	Answer	Response	%
1	Canada	81	35%
2	Brazil	112	48%
3	China	52	22%
4	Hong Kong	34	15%
5	Europe	126	54%
6	Japan	50	21%
7	Saudi Arabia	18	8%
8	Egypt	59	25%
9	Mexico	27	12%
10	Central America	49	21%
11	Australia	181	78%
12	South Africa	66	28%
13	England	135	58%
14	India	30	13%
15	South Korea	17	7%
16	New Zealand	98	42%
17	Russia	41	18%
18	Vietnam	13	6%
19	Scandinavian Countries	34	15%
20	Other	17	7%

To determine the personality components of the respondents the *Excellence for Learning – Student Version (DISC)* reports were used. There were 191 usable data points. As mentioned, the personality component of individuals scoring above 50% or the Energy Line in any one of the elements (D, I, S, or C) will play a significant role in his or her behavioral tendencies. To determine which behavioral tendencies were suggestive that a student would tend to travel abroad, the DISC data was compared to the question “Would you participate in a Study Abroad Program if the opportunity presented itself.” Most students will have more than one DISC element above the Energy Line. Table 10 gives a summary of how many students had high D, I, S and Cs. There were more students that had high I and S than D and C areas.

Excellence for Learning (DISC) Element	Number of Students	Percentage of All Students (N=191)
D	71	37.2%

SOBIE 2014

I	129	67.5%
S	151	79.1%
C	92	48.2%

Table 10 – Percentage of Students With High DISC Elements
(D, I, S, and/or C > 50%)

When you normalize the data and consider the percentage of high D, I, S or Cs that responded to the question as “yes,” “no” or “maybe” the results are inconclusive (see Table 11). There appears to be a slight preference of Is (46%) interested in study abroad while Cs (21%) are more definite in their “no” response.

Excellence for Learning (DISC) Element	Students Responding to Question		
	Yes	No	Maybe
D	27 (38%)	11 (15%)	33 (46%)
I	59 (46%)	13 (10%)	57 (44%)
S	60 (40%)	24 (16%)	67 (44%)
C	32 (35%)	19 (21%)	41 (45%)

Table 11 – Percentage of High D, I, S and C Students Responding Participating in Study Abroad

The *Excellence for Learning – Student Version (DISC)* report contains behavioral hierarchy factors in which respondents are rated and ranked according to tendencies. Table 12 contains a list of the behavioral hierarchy attributes. For purposes of discussion a delta of 10 was used to

Behavior	Yes	No	Maybe
Urgency	42.3	43.0	44.7
Frequent interaction with others	66.4	51.1	62.3
Organized workplace	44.8	62.4	50.5
Analysis of data	46.5	62.6	51.1
Competitiveness	50.0	49.3	52.6
Versatility	54.2	46.3	53.0
People oriented	72.4	61.1	69.2
Frequent change	54.5	46.5	52.8
Customer relations	70.8	69.2	71.5

Table 12 – Behavioral Hierarchy Responses Compared to Intent to Participate in Study Abroad

compare respondents that answered the question about participating in a study abroad. Deltas greater than 10 are shaded. It appears that students indicating they would participate in study abroad as compared to those indicating they would not, like frequent interaction with others, have a preference for less of an organized work space, are less drawn to data and are people oriented (Table 12). These factors are defined as follows:

Frequent interaction with others - A strong people orientation, versus a task orientation. Dealing with multiple interruptions on a continual basis, always maintaining a friendly interface with others.

Organized workplace - Systems and procedures followed for success. Careful organization of activities, tasks and projects that require accuracy. Record keeping and planning for success.

Analysis of data - Analyzing and challenging details, data and facts prior to decision making and is viewed as an important part of decision making. Information is maintained accurately for repeated examination as required.

People Oriented – Spending a high percentage of time successfully working with a wide range of people from diverse backgrounds to achieve a “win-win” outcome.

Source: Target Training International, Anne Klink (personal communication, November 24, 2009)

According to Bakalis and Joiner (2004), students that participate in study abroad programs tend to have a high degree of openness and a high tolerance for ambiguity. This research provides some support for their conclusions. Students that answered “yes” to participating in study abroad rated organized workplace and analysis of data lower than those answering “no” (Table 12). This would suggest that these students have a higher tolerance to ambiguity. Additionally, students that answered “yes,” appear to have a stronger preference for frequent interaction with others and are people oriented which suggest they have a higher degree of openness. Perhaps those answering “no” need more detail and assurance to lessen the ambiguity of study abroad.

Conclusion

Over 200,000 more students participated in study abroad programs in 2012 than in 1989, and yet this continues to represent a relatively small number of the overall 20,000,000 American college and university students who are enrolled in undergraduate and graduate programs. There is a wealth of information describing validated benefits for American students who study abroad. These benefits range from positive career impact upon graduation to benefits in the classroom based on learning that took place during the study abroad program to increased maturity that can result due to study abroad experiences. Yet there are barriers that would appear to be preventing students from electing to participate in study abroad opportunities. These can vary from costs for the program, possible lack of family support,

difficulty in transferring courses back to a curriculum that has little room for variation in courses, and personal relationships.

There is some evidence from the current study that students who elected to study abroad tended to be stronger in people orientations, have a higher tolerance for ambiguity, a stronger preference for frequent interaction with others and a higher degree of openness. It is likely that the current approaches to study abroad appeal to students with these characteristics and meet needs for study abroad opportunities.

If we are to better meet the needs of all students in the area of study abroad, it may be necessary to re-examine the model being used for study abroad. There was a time when study abroad represented a full year of studying abroad in another country and was only available to the wealthier students. As globalization has become more widespread and the numbers of students pursuing degrees in higher education has increased, the concept of a year for study abroad has evolved through several stages: a semester, a summer or even one summer session to the popular 10 – 14 day study abroad programs.

One question that might need to be considered is how Colleges and Universities can find ways to make short term study abroad participation more widespread regardless of students' behavior preferences. Colleges and Universities are aware of the potential value to all students of participating in study abroad opportunities. Businesses are aware of the increasing impact of globalization in their customer base and their need for employees who are comfortable interacting with employees from varied backgrounds. Perhaps there could be opportunities for partnerships between businesses and universities to help with matching funds to encourage growth in participation of a broader group of students in short term study abroad programs, especially when the areas being visited were related to areas where the companies have an established base of clients. It appears unlikely that globalization will decline in the near future so further research to find ways to increase participation of a broader base of students in study abroad is needed.

Further Research

As Colleges and Universities look for ways to increase student participation in study abroad programs, it is as important to know why students currently choose not to participate in study abroad programs as it is to know why students do make the choice to participate. Becoming aware of barriers, whether perceived or real, is a step toward learning how to help students eliminate those barriers and help increasing numbers of students realize that the benefits of study abroad opportunities are within their reach.

As mentioned earlier in this paper, one possibility could be as simple as providing information in a more detailed format that would appeal to students who are detail oriented more than people oriented. Finding a way to help students plan in advance to be prepared for the costs of a study abroad program could help with one of the major concerns identified by a number of potential study abroad students. If students are contacted as freshmen and educated about the value and potential benefits of study abroad opportunities and educated about the options that could be available at the end of their junior year, maybe they could be encouraged to start saving with that goal in mind. In some Colleges, there are planned

SOBIE 2014

rotations for study abroad programs where students could know well in advance what would be available and be encouraged to plan early to make that part of their University experience.

Learning more about the students who choose not to study abroad and those who do choose to study abroad and why they make that decision can be the basis for learning how to make study abroad fit the needs and goals of more students. Further research into this area is certainly a real need for today's graduates and those who are just beginning their journey into higher education.

References

- Bakalis, S. & Joiner, T (2004). Participation in tertiary study abroad programs. *International Journal of Educational Management*. V 18 n4 286-291.
- Bollag, B. (2003) Report urges federal effort to triple number of students studying abroad. *Chronicle of Higher Education*. 50(13). pA33
- Bonnstetter, B. & Suiter, J. (2007) *The Universal Language DISC: A Reference Manual*. Phoenix, AZ: Target Training International, Ltd.
- Bonnstetter, B. (2006). *Groundbreaking research: What's inside of top sales performers in the United States and Europe*. Phoenix, AZ: Target Training International, Ltd. Retrieved November 28, 2008 from http://ttied.com/images/b/b0/TTIMAG_GroundbreakingResearch.pdf
- Collins & Davison (2002). From the margin to the mainstream. *Change*. 34(5) 50-59
- Fugate, D. L., & Jefferson, R. W. (2001). Preparing for globalization; Do we need structural change for our academic programs? *Journal of Education and Business*. 76(3), 160-171
- Institute of International Education (IIE) (2014). Opendoors 2013: A quick look at U.S. students studying abroad. Retrived from <http://www.iie.org/Research-and-Publications/Open-Doors/Data/US-Study-Abroad/Infographic>.
- Marston, W. M. (1928). *Emotions of normal people*. New York: Harcourt Brace.
- Meras, E. (1932). World-mindedness. *The Journal of Higher Education*, 3(5), 246-252.
- Mercer (2013). 2013 Cost of Living Rankings: African, European, and Asian cities dominate the top 10 most expensive locations for expatriates. Retrieved from <http://www.mercer.com/press-releases/cost-of-living-rankings>.
- Miao, S & Harris, R (2012). Learning and personality on study tours abroad, *Research in Post-Compulsory Education*, 17:4, 435-452.
- NAFSA (n.d.). Trends in U. S. study abroad. Retrieved from http://www.nafsa.org/Explore_International_Education/Advocacy_And_Public_Policy/Study_Abroad/Trends_in_U_S_Study_Abroad/.
- Relyea, C., Cocchiara, F. K., & Studdard, N. L. (2008) The effect of perceived value in the decision to participate in study abroad programs. *Journal of Teaching In International Business*, 19(4) 346-361
- Schnusenberg, O, de Jong, P, & Goel, L (2012). Predicting study abroad intentions based on the theory of planned behavior. *Journal of Innovative Education*. V10 N3 337-361.
- Souto-Otero, M, Huisman, J, Beerkens, M, de Wit, H, Vujic, S (March, 2013). Barriers to international student mobility: Evidence from the Erasmus program. *Educational Research*. 42: 70-77.

Spiering, K. & Erickson, S. (2006). Study abroad as innovation: Applying the diffusion model to international education. *International Education Journal*, 7(4) 314-322.

Stoud, A.H. (November, 2010). Who plans (not) to study abroad? An examination of U.S. student intent. *Journal of Studies in International Education*. Volume 14: 491

U. S. Department of Education (n.d.). U. S. Study Abroad Programs. Retrieved from <http://www2.ed.gov/about/offices/list/ous/international/usnei/international/edlite-study-abroad.html>.

Vrba, A., Mills, L, Deviney, D., & Ball, E. (2011). *The Relationship of Student Behavioral Style and Interest in Study Abroad Programs*. *Western Journal of Human Resource Management*, Winter, 6, 6-15.

Williams, T. (2013). *Examine your LENS: A tool for interpreting cultural differences*. *Frontiers: The Interdisciplinary Journal of Study Abroad*. Vol. XXII, Winter 2012 – Spring 2013. 148-165.

ABSTRACTS

An Interview-Based Approach to Assess Readiness for IFRS

Noema “Amy” Santos
State College of Florida

William C. Quilliam
Florida Southern College

As the United States moves toward the eventual adoption of International Financial Reporting Standards (IFRS), various entities are interested in the current state of accounting education and how to best facilitate efforts to improve educational programs—the SEC is one of them. One milestone the SEC considers to be vital in making a decision regarding whether to require all public companies in the United States to adopt IFRS is the progress on IFRS-related education and training of investors, preparers, and auditors, as well as the progress made in incorporating IFRS content into accounting curricula. This study uses an interview-based approach to identify some of the issues facing accounting educators and the profession.

Information about the current state of IFRS-related education is equally important for employers. This has an impact on planning Continuing Professional Education (CPE) programs for future accounting graduates when they join the labor force. Accounting practitioners should not be expected to understand the challenges involved in the adoption of an entirely new accounting framework. Key stakeholders must provide input so that preparers of financial statements can elect policies that best reflect the underlying business. IFRS knowledge is limited in the United States, so each conversion project needs to start with internal education.

Accounting professionals will need to understand local GAAP and IFRS and the situations in which each applies. Major accounting firms must continue to offer training and publications as well as advice based on their experience in specific areas. There are unique international audit issues that present challenges in audits of foreign companies and divisions; accounting professionals will benefit from additional training in these areas. They include “financial statement presentation, consolidations, combinations, inventory, intangibles, long-term assets, leases, taxes, revenue, employment benefits” and many more.

The impact of an IFRS implementation on the professor pipeline must also be considered. A fear factor among professors regarding acquiring IFRS proficiency and adapting course work at the same time has already been identified. It has been suggested that some academics may opt to retire early rather than having to learn principles-based accounting—this will intensify the shortage of qualified educators. On the other hand, some argue that professors might feel more comfortable teaching a principles-based framework in which students will be encouraged to search for the facts and there will be more reliance on underlying economic constructs. If educators have the materials they need, teaching IFRS can actually be more exciting and more consistent than teaching GAAP standards.

A Gold Price Anomaly

Laurence E. Blose
Vijay Gondhalekar

Abstract

This study examines returns on the COMEX front month gold contract over the period 1985 through 2012. The results (presented in Table 1) show that average overnight gold returns are significantly greater than average day returns. The cause of the anomaly is not known, but it is consistent with a high opening price that adjusts during the day. The result suggests that investors should not enter market buy orders when the market is closed to be executed at the price of the first trade. Enter the buy orders later in the morning after prices have adjusted. Similarly, investors selling gold are likely to get a higher price if the order is executed at the opening price.

Table 1
Overnight and Day COMEX Gold Returns 1985-2012

The overnight return ($close_{t-1}$ -to- $open_t$) and day return ($open_t$ -to- $close_t$) on gold is calculated for the COMEX front contract over the twenty-eight years 1985-2012. Parametric t-test and non-parametric sign-rank test is used for assessing whether the average difference across the twenty-eight years is different from zero.

	Night	Day	<u>Night – Day Difference</u>	
	Return (%)	Return (%)	Parametric p-value	Wilcoxon p-value
Mean	0.096***	-0.066***	0.000***	0.000***
Std. Dev.	0.593	0.913	0.000***	0.000***
Skewness	2.227***	-0.194***		
Kurtosis	27.931***	9.189***		
Sample size	6988	6988		

Kilmogorov-Smirnov Two Sample Test: p-value = .0001***

*, **, and *** represent significance at the .05, .01 and .001 levels respectively (all tests are one sided).

**Corporate Lobbying – The Tradeoff Between Payback,
Accountability/Responsibility and Democracy**

Bruce A. Kibler, PhD.

Gannon University

Abstract

Lobbying has become an integral part of everyday corporate business. Strategic political management, as it is euphemistically called, has changed its demeanor over time. This is due to changing social, economic and political landscapes, influence opportunities and the overall payback on lobbying efforts. The U.S. has perfected a legal system of what is considered corruption in other countries of the world, thereby giving corporations an excellent avenue for revenue enhancement. This phenomenon is also a result of continued degradation of corporate governance, the principle-agent accountability and a dissolution of the boundaries between corporations and their political pendants, those elected to be agents of the people in regulating economic activity for the good of the population, i.e. democracy

This paper attempts to lay out a general framework of democracy and the role of economic actors within this framework drawing on the principles of corporate governance and the checks and balances of the principle agency theory. The discussion necessarily encompasses the concept of externalities, i.e., costs encompassed by the license to operate and the developmental path of how these have been handled by the economic and political spheres over time.

Keywords

Corporate Governance, Corporate Social Responsibility, Democracy, Lobbying, Agency Capture

Experiential Learning in a Liberal Arts Business Program

Carolyn Garrity, Rick Lester, Sara Robicheaux

Birmingham-Southern College

ABSTRACT

An experiential learning component is a critical part of a business educational experience. While in college, students need to have the opportunity to explore their passions through courses in a variety of disciplines. Then students should have the opportunity to gain experience through experiential learning such as internships, service learning, or student and faculty collaboration in research.

Often business schools focus on taking bright students and have them undergo rigorous academic training in specific areas of business. Business schools should embrace a philosophical shift which allow students to do training in the field of business administration within a broader liberal arts context, which requires them to be able to go beyond mastering a single subject. In this case, students must also demonstrate that they can think critically, communicate well, and connect ideas from across disciplines. That means that they are intellectually agile, have creative insights, and are ready to learn from you when they exit the classroom and enter the work force.

Of course we understand that classroom learning is critical but also insufficient. To truly become the business professionals of tomorrow, our students must have the opportunity to apply what they have learned in a real-time business context. All business students need to participate in experiential learning to become more ethically aware and strive to be professionals who want to have an impact on society. This objective requires that learners continually enhance: their ability to apply and critically examine academic knowledge in light of evidence and experiences; their knowledge of themselves as learners and as members of their chosen communities; and, their capacity for democratic, civic, and ethical action. In learning initiatives related to experiences, student learning needs to examine academic knowledge, personal growth, and civic awareness.

To assess the learning in experiential initiatives, critical reflection is an integral component. Critical reflection is defined as the process by which individuals and groups make sense of experiences through inductive, deductive, and adductive reasoning. A common model for critical reflection is the DEAL (Describe, Examine, and Articulate Learning) model (Ash and Clayton,

2009). The DEAL provides a shared strategy for aligning experiential learning projects with student learning outcomes.

This paper will present ways in which to provide valuable experiential opportunities for business students in internships, service-learning, and faculty student collaborative research within a liberal arts environment.

WORKS CITED

Ash, Sarah L., and Patti H. Clayton. "Generating, deepening, and documenting learning: The power of critical reflection in applied learning." *Journal of Applied Learning in Higher Education* 1.1 (2009): 25-48.

Comparing the Tax Effects of the Indirect Foreign Tax Credit and the Dividends Received Deduction

Cynthia Sneed

Jacksonville State University

John Sneed

Jacksonville State University

Abstract:

When U.S. corporations invest in other corporations, they frequently receive taxable income in the form of dividends. Since corporate entities are already facing double taxation on their earned income, as it is taxed when they earn it and again as dividends when they distribute earnings to their stockholders, dividends received from other corporations are subject to triple taxation when the income is eventually distributed to stockholders. To address this issue, the tax code allows the dividends received deduction (DRD) that is available only for corporations. This deduction allows corporations to deduct most or all dividends received from other corporations from income to remove the third layer of taxation on most dividends.

However, the DRD is only available on dividends received from domestic corporations. Dividends received from foreign corporations are still subject to triple taxation. However, the tax code also includes an indirect foreign tax credit that helps to alleviate the issue of triple taxation. The United States is one of a few countries that taxes the worldwide income of its citizens. Most countries tax income that is earned within the country. Under the U.S. system, foreign source income is also subject to tax in other countries. To address this issue, the tax code allows the direct foreign tax credit for taxes paid to a foreign government, reducing U.S. taxes owed. The direct foreign tax credit is available to all taxpayers with foreign source income.

The tax code also includes an indirect foreign tax credit that only applies to dividends received from foreign corporations. It is argued in the literature that the indirect foreign tax credit is a credit for the taxes paid by the foreign corporation on the income before it is distributed to the U.S. taxpayer. Unlike the direct foreign tax credit which is available to all U.S. taxpayers, the indirect credit is only available for U.S. corporations. This limitation suggests that the primary objective is to eliminate the triple taxation when dividends are paid from one corporation to another. The purpose of this paper is to compare the tax impact of the indirect foreign tax credit as opposed to the DRD. If, as expected, the results are similar the DRD could be made available for dividends received from foreign corporations. This would allow for the elimination of the indirect foreign tax credit which would help simplify the tax code.

Student Satisfaction, Commitment, and perceptions of learning in online, hybrid vs. web-enhanced course delivery: a measurement invariance model

Jennifer Pitts, Ph.D., Columbus State University

Robin L. Snipes, Ph.D., Columbus State University

Lei Li, Ph.D., Southern Polytechnic State University

Abstract

A growing body of research comparing traditional, hybrid, and fully online courses in higher education along a myriad of dimensions suggests minimal differences in student perceptions of learning, commitment, and satisfaction among course delivery modes. Although several studies have found that online education can be as effective and satisfying as traditional and web-enhanced classroom delivery, there is limited research that examines the equivalence of these factors when comparing subgroups of traditional vs. online students. In this study, a structural model comparing student perceptions in an online course with an equivalent traditional web-enhanced course is examined. Data were collected from students enrolled in multiple sections of an introductory Management Information Systems course and analyzed using multiple group invariance analysis to assess the equivalence of the scales across the two subgroups.

Improving Student Financial Behaviors using Financial Literacy Training and Coaching

Jennifer Collins & Michael Campbell
Florida A&M University

Recent research shows that student loan debt is on the rise across the country. In 2013, student loan debt totaled 1.08 trillion dollars a 300% increase since 2003. This is an alarming fact given that many students are graduating and joining the ranks of the unemployed and under-employed. The United States' consumer debt rate rose by 241 billion dollars in the fourth quarter of 2013, the largest increase in one quarter since 2007. Some states are exploring the inclusion of financial literacy in high school curriculum. In an effort to ward off the negative impacts of student debt and lack of financial literacy, one mid-sized university in the southeast received a three-year grant to implement a financial literacy program includes training graduate students as trainers and coaches for the general study body. In addition, the program uses the FDIC MoneySmart financial literacy curriculum to educate students, faculty, staff and the larger community. The project includes graduate student and faculty mentor research projects that examine the relationship between financial literacy and student financial behaviors. The goal of the program is to improve student financial literacy and change student behaviors towards money, debt and savings. This paper puts forth the model deployed by this university to enhance student financial literacy.

Key Words: Financial Literacy, Student Financial Behavior, Financial Training & Coaching

Strategic Perspectives on Social Media Driven Entrepreneurship

Dr. Tamela D. Ferguson, University of Louisiana at Lafayette

Dr. Ron G. Cheek, University of Louisiana at Lafayette

Abstract

Social media is a key strategic component in the development of entrepreneurial pursuits. Innovative entrepreneurial knowledge and skill development is a critical component in today's technology laden business environment. This may be especially true of smaller organizations, which often initially lack significant resources or networked connections. We outline how an entrepreneur's hands-on development and use of technology mediated social processes can be useful in creating a competitive advantage. Of additional importance is the understanding of best practices for social media usage in the bigger picture context of an organization's stakeholder interactions. An approach to leverage social media usage from a strategic perspective was developed for use by entrepreneurial firms, especially by startups or those first engaging in social media usage.