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Productivity Strategies And Its Alignment With Business Strategy

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ABSTRACT

This paper an approach is proposed based on a model of productivity that includes both qualitative and quantitative aspects of inputs and outputs, and a mechanism to exert control over the dynamics.

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INTRODUCTION

A key variable in relation to economic growth is productivity. On the national level, productivity is usually measured in terms of the volume of labour used in relation to the output produced in terms of the gross domestic product (EANPC, 2005). The national productivity is partly derivable from the productivity levels achieved in individual organisations or enterprises within the nation.

At the level of an enterprise, a high level of productivity is one of the crucial variables to perform well, to compete successfully and to survive. At this level, productivity is basically described as the ratio between outputs and inputs, where the inputs comprise all factors utilized to produce the output demand. The input factors include labour (man hours or fulltime equivalents) as well as capital and resources. The outputs of the enterprise may be defined in terms of physical volumes (e.g. tons produced) or financial indicators (revenues or profits or added value) (Eilon, 1985). This way of thinking of productivity finds its origin in the traditional manufacturing industry (e.g. Sink, 1983), where the inputs and the outputs are often tangible and quantifiable. In these cases, the monitoring and managing of productivity is relatively straightforward and is often associated with increasing efficiency.

It is contentious however, whether this traditional concept of productivity also holds for the large variety of private and public organizations in our modern society. Specifically, it can be questioned how this concept relates to the performance or competitive strength of contemporary organizations. Many of these organizations are characterized by a certain amount of knowledge work, rather than routine manual work only, and the deliverance of services, rather than discrete numbers or volumes of tangible products. It can be argued that in such organisations not only quantities of inputs and outputs, but also aspects of quality are of relevance from the perspective of organizational performance (Gro¨nroos and Ojasalo, 2004). At the input side for instance, the creativity, the motivation and the commitment of workers might be an equally or even more important determinant of productivity than the number of workers. Similarly at the output side, the appreciation of services by customers might add more value for a company compared to the exact volumes of services. Therefore, a meaningful concept of productivity for organizations that (at least) partly rely on knowledge work should incorporate quantity as well as quality aspects, both at the input and the output side. The problem here is the development of the most effective productivity strategy which notes the both qualitative and quantitative aspects, and will eventually lead to increased productivity. To answer this concern, in this paper an approach is proposed based on a model of productivity that includes both qualitative and quantitative aspects of inputs and outputs, and a mechanism to exert control over the dynamics.

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Productivity definition and its different aspect:

productivity is an integral part of performance. Sink and Tuttle (1989) and Hoehn (2003) identified productivity to be probably the most crucial area for operational and process management. In their viewpoint, they are seven performance criteria, i.e. profitability, productivity, quality, quality of work life, innovation, effectiveness, and efficiency. Other frameworks such as University of California and family of measure also explicitly indicate that productivity is a key component of performance. The research conducted by Manasserian (2005) and Mei and Nie (2008) underlines the importance of productivity and quality for manufacturing firms.They further highlighted the importance of productivity as a key strategic objective for performance management at several firms.

Productivity is the relationship between outputs such as goods and services produced, and inputs that include laboure, capital, material and other resources (Hill,1993). In addition, two more specific types of productivity are measured: the labour productivity measuring outputs in terms of hours worked or paid for and the "total factor" productivity including the cost of equipment, energy,material and the cost of the labour (Gunasekaran, 1998).

$$\text{productivity} = \frac{(\text{goods} + \text{services})}{(\text{human} + \text{material resources})}$$

The concept of productivity has become as broad as a "garbage can" definition or "umbrella term" (Johnston and Jones, 2004; Tangen, 2005). Janssen (2010) shows that many researchers have tried to create holistic concepts, but that it has also resulted into considerable confusion, differences of opinion and conflicting definitions. Productivity as a concept is, for example, related to efficiency and effectiveness (Rutkauskas and Paulavicˇiene˛, 2005), to tangible and intangible assets (Vrat *et al*., 1998), and it was being put on a par with performance (Sink, 1983) and profitability (Tangen, 2005). Other aspects that were associated with productivity further broadened the concepts, such as the time factor (e.g. lead time (Johnston and Jones), quality (Gro¨nroos and Ojasalo, 2004), the role of clients or customers (Martin *et al*., 2001), value creation (Rutkauskas and Paulavicˇiene˛ 2005) and capacity planning (Ja¨a¨skela¨inen and Lo¨nnqvist, 2009). Broadening the scope of productivity, therefore, indeed enhanced the insight into relevant variables, but it was not elucidating the concepts (Tangen, 2005). Especially with reference to knowledge work and services it only lead to more confusion. ". There was a need to make productivity applicable outside traditional sectors, which made it necessary to not only define productivity itself, but also the characteristics of knowledge work and services. Instead of limiting the field a further expansion was the result. Obviously, knowledge workers are slippery concepts themselves, and are according to Janssen (2010) to a large extent intangible, perishable, reflecting the production and consumption simultaneity, heterogeneous in customisation, intransparant and identifiable to persons (Ja¨a¨skela¨inen and Lo¨nnqvist, 2009). Just as with the term productivity the several connecting variables are explaining why the scope of knowledge and service work was broadened, namely the role of clients, the characteristics of this type of work and its workers, namely professionals (Janssen, 2010). Characteristics of professional and knowledge work are its limited task specifications, significant amount of mental tasks, long cyclical tasks and limited specifications of targets, and a process in which brainwork leads to new knowledge (Drucker, 1999; Ramirez and Nembhard, 2004; Ja¨a¨skela¨inen and Lo¨nnqvist, 2010). Its intangibility seems paramount. Accordingly, Ross (1994) argues that job satisfaction is an important factor to have productive workers, so that any improvement programe in the working environment, should take into account this factor.

Integration of various functional areas can help to improve productivity. Shapiro (1977) shows that an integration of marketing and manufacturing strategies can increase the organizational effectiveness. Furthermore, gunasekaran *et al*. (1994) argue that an integration of various functional groups within a manufacturing organization can improve both productivity and quality in the organization. Drucker (1991) emphasizes the role of knowledge workers support services to achieve gains in both productivity and quality. Patel (1993) highlights the role of selection, application and interpretation of statistical data generated by appropriate types of control chart (such as statistical process control, SPC) to achieve success in improving quality and productivity.

The Q4-model and productivity strategy:

The holistic model of Vuorinen *et al*. is considered as a generally applicable balance-model, named Q4, where the relevance from a company performance perspective of the four Qs depends on the type of organization (Van Rhijn *et al*., 2010). By the visualisation in Figure 1, it is stressed that the productivity of any organization reflects the ratio of outputs and inputs, where inputs and outputs cover both quality and quantity aspects and that productivity constituting four factors are interconnected and should not be treated in isolation.

Following the Q4-model, productivity may improve in several ways, namely:

- output increase at constant input;
- input decrease at constant output;
- output increase and input decrease;

- output and input increase, with the increase in input proportionally less; and
- input and output decrease with the decrease in output proportionally less (Misterek *et al*., 1992; Tangen, 2005).

This shows the various strategy options for organizations to aim for more productivity.

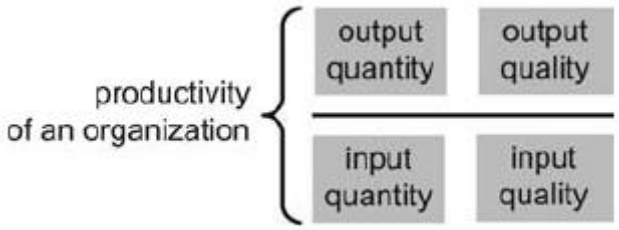

Fig. 1: Q4 model

Another issue is how a chosen productivity strategy can become effective. In this respect it should be noticed that it is not only a direct modification of the inputs or outputs that would lead to productivity effects. It is also the modification of the so-called throughput or "how inputs are transformed into outputs" that might be effective, as illustrated by the following examples which examples correspond to the above-mentioned five productivity strategies. A new way of producing goods and services for example, can lead to an output increase at a constant input; cutting in labour costs and combining that with such a new way of producing can result in a constant output while effectuating an input decrease; if one succeeds in cutting throughput times, which results in both lower input costs, and shorter delivery times for customers, an output increase and a input decrease are observed; investing in training of employees resulting in more than proportionally higher quality of quantity of output is exemplary for a output and input increase, with the increase in input proportionally less, and finally employing cheaper and less qualified employees resulting in less than proportional reduction of output quality or quantity can be the result of input and output decrease with the decrease in output proportionally less. Productivity strategy refers to the decision latitude to choose from the various options how to enhance productivity, once an organizational strategic decision is taken. Organizational strategic decisions refer to the organisation's business model and its core task what it produces for which segments of the market. In order to effectuate strategic choices, one should be able to diagnose the process which links inputs to the outputs, and subsequently design an intervention to implement at the operational level (Oeij *et al*. 2011).

Porter's framework (Porter, 1980) posits that a firm can outperform its competitors by pursuing either of two generic strategies, cost leadership or differentiation. Porter also discusses the characteristics of the firm in terms of structure, processes and practices that are necessary to successfully implement either cost leadership or differentiation.

According to this framework, a cost leader is the firm that has the ability to be the lowest cost producer in an industry for a given level of quality. Firms can adopt different methods to achieve cost leadership such as large-scale manufacturing to achieve economies of scale (both production and purchasing), target costing, benchmarking, JIT, TQM, and statistical process control. According to Hambrick (1983) cost leadership is achieved through cost efficiency (using the lowest amount of input for a given level of output) and asset parsimony (using the lowest amount of fixed assets to generate a given level of output). Thus, a cost leadership strategy is closely linked to productivity improvements, since productivity is the proficiency with which different inputs are combined to generate a specified output. Further, Chang *et al*. (2012) find that firms that follow a cost leadership strategy have higher levels of productivity. On the other hand, firms pursuing a differentiation strategy create value using a different paradigm with the focus being primarily on generating high margins through the uniqueness of products, price inelasticity, customer loyalty and innovative distribution channels. Hence, there is heavy emphasis on R&D expenses and advertising to create unique product features and also generate customer awareness and brand loyalty. Productivity is not essential for a differentiator; in fact, the process of implementing a differentiation strategy (such as product uniqueness, emphasis on quality, etc.) may actually be detrimental to a focus on productivity. Chang *et al*. (2012) formally demonstrate that firms that concentrate on differentiation do so at the expense of productivity.

To summarize, Porter shows that there are two generic strategies either of which if successfully implemented will enable firms to have competitive advantage over their competitors. Numerous studies have empirically confirmed this contention. Although the implementation of the two strategies will be different, with cost leadership relying on productivity enhancements, while differentiation seeks innovation and brand loyalty, successful implementation of either strategy will lead to better performance. Chang *et al*. (2012) show the heterogeneous relationship between productivity and firm strategy. They show that cost leadership (differentiation) firms are associated with a higher (lower) level of productivity. They find a positive link

between cost leadership and productivity implying that as the level of cost leadership increases, the productivity also increases (Bryan *et al*. 2012).

Productivity Strategy and its alignment with Business Strategy:

Addressing productivity strategically means defining the scope to include the entire system required to produce goods and services for customers and aligning priorities to support the business plan, and ensuring that managers understand these priorities and agree upon high-leverage opportunities for productivity improvement. In this total-systems concept, productivity is the effectiveness of the organization in accomplishing its goals. With such a definition fragmented, uncoordinated, short-term programs miss the point. What is needed is a broad scope effort aimed at fundamental issues reaching into every segment of the organization. It must be integrated, to control cross-impacts, secondary effects, and broader implications. Such an approach may require years to implement rather than months and should be continuous and unending. A substantial investment will be required in managerial time as well as in technology and equipment (Hayes, 1981). This strategic approach must be directed by a top-level executive with general management responsibility who can involve functional managers unaccustomed to addressing productivity improvement as an organizational objective. A top-level general manager is needed also to resolve the interfunctional trade offs and policy issues that often arise (Abernathy and Hayes, 1980). When a strategic approach is taken toward productivity improvement/two important questions arise: how does productivity strategy relate to business strategy, and what must management do about this relationship? With this larger concept of productivity, any strategy for improving productivity becomes an aspect of business strategy (Wheelwright, 1981). For example, an effort that achieves cost reductions can enhance the firm's ability to compete as a low-cost producer. If product and service quality are improved the firm's competitive position in a growing market can be strengthened.

Obviously, a good fit between any productivity improvement strategy and the business strategy is necessary. When productivity priorities are out of alignment with the requirements of the business strategy, efficiencies may be achieved which do not relate or are even detrimental to what is important in the business (Judson, 1984).

Control cycle:

The control cycle visualizes how quantity and quality inputs are transformed into quantity and quality outputs. These “inputs” and “outputs” refer to the Q4-model. The “process box” refers to the transformation process reflecting the organization of series of transformations for developing, making and providing goods or services. This process – which reflects the “throughput” in which “inputs” are transformed into “outputs” – should be regarded as a dynamic production system that needs to be controlled or managed. The latter is visualized by the control loop wherein the achieved levels of outputs are evaluated by comparing them with standards or norms. If outputs differ from the standard, one requires intervening actions to restore the output to the standard or modifications of the standard. Interventions may involve input modification or process modification.

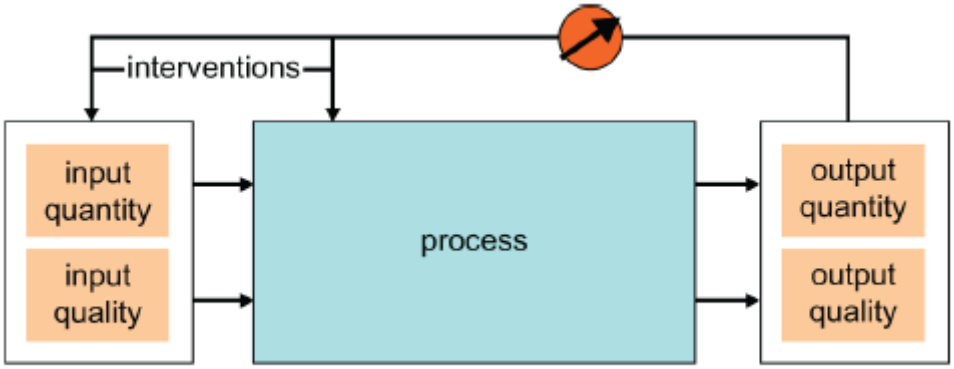

Fig. 2: control cycle

Both the Q4 model and the control cycle (in Figure 1 and 2) form the basis for an approach for the strategic improvement of productivity in a company. One step herein would be the definition of the main elements underlying the output quantity, output quality, input quantity and input quality, as well as their relative importance. The following step would be the formulation or design of a productivity strategy and, subsequently, the concrete intervention for improvement (Oeij, 2011).

When the presented approach is compared to the approach of Vuorinen *et al*. (1998), which had the goal to evaluate the total service productivity, there are some remarkable gains to be mentioned. Although Vuorinen *et*

al. were an inspiring source for the Q4-model, there is a difference in scope, system and practical potential. First of all the Q4-model covers both strategic and operational aspects of productivity, whereas Vuorinen *et al*. underline evaluating the factors constituting productivity. The Q4-model goes one step further in connecting strategic decisions with operational consequences, especially in the application of the control cycle. Second, both approaches are "holistic" in the sense that there is an open eye for the integral side of the qualitative and quantitative aspects. Where the model of Vuorinen *et al*. seems to be helpful from a heuristic perspective in showing that different combinations of variables lead to different models, the Q4-model seeks to systemise the thinking of the entrepreneur in order to improve decision making about developing a proper intervention to improve the productivity of the organisation. Deviating from Vuorinen*et al*.'s attempt to develop a coherent and complete picture of the concept of productivity and then enc ountering difficulties in measuring productivity, the Q4-model chooses another path and puts the practical purpose as central, namely pinning down the buttons to press on in order to enhance productivity. This thir difference makes the model a powerful tool in the hands of innovative change managers, maybe to the detriment of the financial controllers of the organisation. One shortcoming of the Q4-model approach, following from the former remark, might be the absence of measuring the four Qs or a mathematical equation by which one can calculate the productivity. Measuring productivity or performance in services, knowledge work and non-profit organizations is not easy and there is no consensus about appropriate measurement criteria. The main reason is that methods aiming at either some kind of standardization are made-to-measure for single organizations. Standardized methods cannot properly address the heterogeneous diversity, while made-to-measure approaches cannot be generalised. Some methods are too simple, and others are too complex. An approach to evaluate the productivity of such work as knowledge work and services must necessarily make room for a meaningful integration of quantitative and qualitative aspects. Any form to standardize the measurement of this kind of productivity limits its usefulness for improving productivity at the level of organizations, departments and individuals, because it offers no material for unique interventions (see, e.g. Sherwood, 1994; McLaughlin and Coffey, 1990; Ja¨a¨skela¨inen and Lo¨nnqvist, 2009). Examples like those of Vuorinen *et al*. (1998) indicate that general methods are made to measure to meet specific situations, but even then, to quantify the productivity proves to be so difficult that the researchers end up evaluating different quantitative and qualitative aspects as unique trade-offs, select rather arbitrary measurable variables at hand, or proposing a taxonomy of measurement approaches (Helo *et al*., 2009; Ja¨a¨skela¨inen and Lo¨nnqvist, 2009, 2010).

At this point it should be made clear that there is no general method of measuring productivity that can be meaningfully related to a general method of improving productivity. The Q4-model of productivity is a general model applicable to unique situations. The Q4-model should appeal to the gut feeling of entrepreneurs. It supports the process of substantiating their productivity strategy in a systemic manner that leaves space for arguing trade-offs, instead of trying to quantify productivity as pseudo accuracy. Of course the relevance of numbers and figures is not denied, but in the process of deciding on strategy having room to exercise on the basis of gut feeling or common sense is important as well. Nonetheless, it should be mentioned that further research into measuring productivity is needed. In general, such methods could focus on the process from an integral perspective. Probably it is a step too far to integrate various goals like productivity, quality, value for customers, etcetera, into one single instrument, and it may be more promising to combine several methods that measure different purposes, as is recommended by other researchers (Van Looy *et al*., 1998; Neely *et al*., 2005; Ja¨a¨skela¨inen and Lo¨nnqvist, 2009, 2010; Janssen, 2010). More specific, it is necessary to investigate the workings of the Q4-model as well. The Q4-model of productivity could in the first place be validated by monitoring the reasoning behind the three steps – productivity challenge, productivity strategy and specific intervention through in depth case studies: does this way of reasoning lead to improving results? A second step could be a survey research among a large sample of organisations to establish the determinants of improving productivity by operationalizing the four Q's. Correlational analyses into factors that explain productivity could be informative in learning what works in which type of organisations and sectors. Finally it is recommended to develop measurement instruments that combine results at the organisational level with results at team or even individual level. For example combining a well established instrument like the Balance Score Card (Kaplan and Norton, 1992; 1996), at organisational level, with a method that studies productivity at team level, like ProMES (Productivity Measurement and Enhancement System) (Pritchard *et al*., 2002), can result in meaningfully measuring productivity at aggregated and disaggregated levels. In summary, the Q4-model of productivity, which is applicable in every industrial sector, may help in developing a sound argumentation for organizational action that combines this strategic reasoning, which precedes the subsequent operational management decisions, i.e. the intervention. The model may help to clarify strategic options and operational consequences, which are both of a quantitative and qualitative nature at the same time. The model then can be used as a guide to develop organizational interventions with the purpose to improve productivity, by closely scrutinizing how an intervention affects specific quantitative and/or qualitative aspects (Oeij, 2011).

Conclusion and Some Key Issues in Achieving Alignment:

Addressing productivity strategically means defining the scope to include the entire system required to produce goods and services for customers and aligning priorities to support the business plan, and ensuring that managers understand these priorities and agree upon high-leverage opportunities for productivity improvement. Successful implementation is ensured by formulating step-by-step actions that specify who must do what, when, with whom, and with what resources. Several important issues must be ad dressed to ensure a correct alignment of productivity improvement and business strategies.

- Cost reduction is not necessarily the only or even the primary objective of productivity improvement. Cost reduction should have top priority only when the business strategy requires that operating costs or the cost of goods and services sold be reduced. However, when the business strategy requires product or service improvement, or increased flexibility so that the organization can respond more readily to changes in market conditions, productivity improvement should focus on these ends rather than on cost reduction. A productivity strategy aimed at improving quality or organizational responsiveness will be substantially different from one aimed at reducing costs (Leonard and Sasser, 1982). When one operating unit serves two or more businesses, each with its own strategy, a single productivity strategy will not suffice. Each business strategy must be supported by a productivity strategy that addresses its require ments.
- The productivity priorities required by the business strategy are not necessarily understood at the operating unit level. Often, business strategy is determined by executives in marketing and finance (with help from strategic planning). Typically, operations or manufacturing executives are involved peripherally or not at all. Yet when most company assets and a substantial portion of the payroll are in operations, it often develops its own sense of priorities and momentum, which are often at odds with the business strategy.
- If operating priorities are implicit rather than explicit, they are seldom understood uniformly among key executives and the entire management and supervisory group. often, in the press of day-to-day operations, little explicit attention is given to overall priorities and objectives. Priorities are frequently determined by individual managers, applying their own best judgment. And under such conditions, disagreement about priorities is natural. Yet, a uniform understanding of operating and productivity priorities by all executives, managers and supervisors is critical for the successful implementation of any productivity improvement strategy (Vail, 1982).

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