THE IMPACT OF TECHNOLOGICAL CHANGE ON SALES RELATIONSHIPS IN THE TELECOMMUNICATIONS SERVICE INDUSTRY

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Abstract

The telecommunications services industry, which initially focused on voice communications (e.g. telephony), is deriving an increasing share of revenues from the sales of data services. The current development of Internet related services, and the recent introduction of mobile data services, illustrate this trend. As the data communications business is driven by customers' applications, members of the buying centre concerned with data applications therefore have a growing importance in the business buying behaviour process. In this paper, we will first highlight how technological change is affecting the traditional relationships established by telecommunications companies with telecommunications managers of businesses. Then we will analyse the development of new types of relationships, including co-operation with other actors, in order to reach the other influential members of the buying centre. Finally, we will conclude with possible implications for the industry structure.

1./ Introduction

The telecommunications services industry has been strongly affected by the growing importance of the data communications business. This change became a revolution character with the rise of the Internet, which challenged its traditional technological base, competence base and culture, as well as its economic model (Vialle 1998).

The liberalisation of the telecommunications industry, as well as the convergence between the telecommunications, computing and media sectors, has also resulted in the emergence of new actors and new types of businesses. This contrasts with the traditional vertically integrated model of telecommunications derived from the original voice telephony business, in which the telecommunications companies were nearly self-sufficient in the implementation of all the value-chain activities, from conception and production to the distribution of services.

The combined liberalisation and convergence movement also resulted in a tremendous innovation in the field of services, as summarised in table 1.

As a consequence of the complexity of the technologies, services and applications, there is an increasing need from business customers for integration services, solutions and outsourcing services (figure 1). The provision of solutions, specifically designed for a company or for a sector of industry, may involve the co-ordination of a wide range of actors:
- telecommunications companies,
- network and computing products suppliers,

- software suppliers,
- internet developers,
- web designers,
- hosting service providers,
- content providers and aggregators,
- application services providers,
- network integrators,
- applications and information system integrators,
- facilities management services suppliers,
- business and organisation consultants.

Network Services	Infrastructure	Access	Software	Content
Intelligent Networks **Network Application Layer** **IP-Based Services** *Legacy Data* *Legacy Voice* *Physical Transport* *- Long Distance* *- Metropolitan* *- Final connection*	*Outsourced* *CPE/LAN/WAN* **Managed Network Service** **Web Hosting** **ASP Hosting** **Caching/Streaming** **Traffic Management** **Data Centres** **Managed POPs / Co-location** **Web Access / ISP** **Storage**	*Narrowband* *ISDN* **XDSL** **Cable** *2G Wireless* **Wireless Data** **3G Wireless** **Fixed Wireless** **Satellite** **Bluetooth**	**Office Software** **Knowledge Management** **ERP / Administration** **Sales Force Effectiveness** **Custom Development** **Unified Messaging** **Browsers** **Search Engine** **Digital Content Services** **Personalization** **Transaction Support** **Games**	**Consumer** **Sports / News / Weather** **Music/ Entertainment** **Financial Data** **Research** **Shopping** **Business** **Company Information** **Industry Information** **Business Reference**

Table 1: The new technologies and service environment (in italics: areas in which incumbent telecommunications companies have traditionally operated).

With some notable exceptions such as Deutsche Telekom[1], telecommunications companies mainly remain near to their core competence by providing infrastructure services such as hosting, and by focusing on the co-ordination and interconnection of different partners around their platforms. As concerns content provision, they generally position themselves as a content aggregator, with a few acquisitions of content providers and in-house developments in order to differentiate their offerings.

On the demand side, four main trends characterise business customers (Vialle 1996, 1998) The first is globalisation, leading business companies to conclude alliances and partnerships and therefore generating new needs for communication. The second is an increasing demand for bandwidth, especially for the interconnection of data local area networks. The third is the steady development of external communications from business customers, in particular with customers. The fourth is the change in business companies strategies by concentrating on their

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[1] Deutsche Telekom follows a diversification strategy by complementing its product portfolio with IT services, positioning itself as the telecoms and IT integrator for business customers. The main element of this strategy was the acquisition of Debis Systemhaus, the second largest IT service provider in Europe.

core-business and therefore the outsourcing of non-strategic business activities such as managing private telecommunications networks.

Finally, as the data communications business is driven by customers' applications, members of the buying centre concerned with data applications therefore have a growing importance in the business buying process. IT managers and users (functional or operational departments), now play a determining role in this process, and particularly in the initial stages of the process. As a consequence, telecommunications companies have to re-define their traditional commercial relationships, which were mostly targeted towards telecommunications managers of business customers.
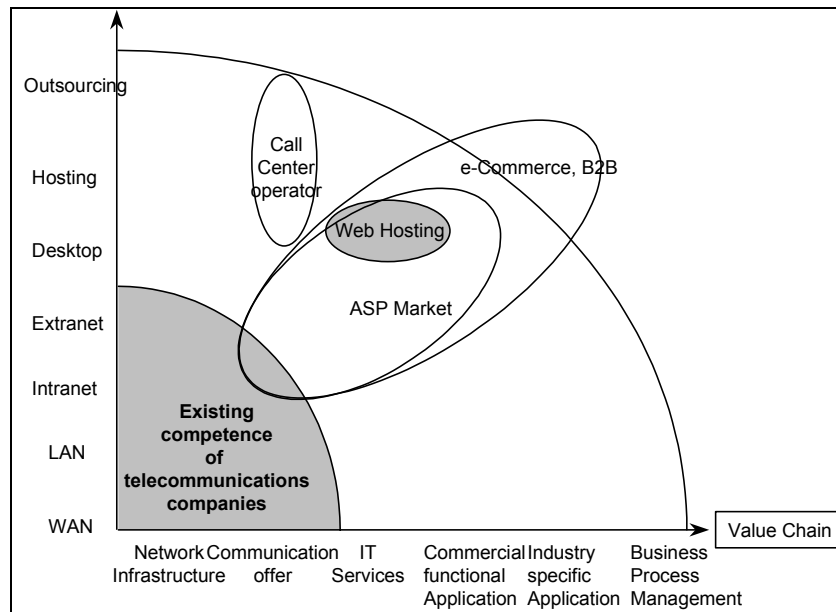

Figure 1: The trend towards data and business solutions integration. Source Straub (2001)

2./ Changes in Business Buying Behaviour Process and Roles[2]

At business customers, three main actors may play a role in the Buying Process of telecommunications services (cf. figure 2):

- the telecommunications manager, in charge of managing the telecommunications infrastructure,

- the IT manager, in charge of managing the computing infrastructure,

- and the user department, in charge of managing business processes.

ICT-based applications are subject to the influence of both IT manager and user department.

Over the last decade, we have observed an evolution of the role played by the three actors in the decision-making process. This section presents the main changes at business customers and explains the reasons for change.

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[2] The material used in this section is drawn from former research (Epinette and Vialle, 1999, 2000), (Vialle and Epinette, 2001). It includes qualitative interviews and two quantitative surveys.
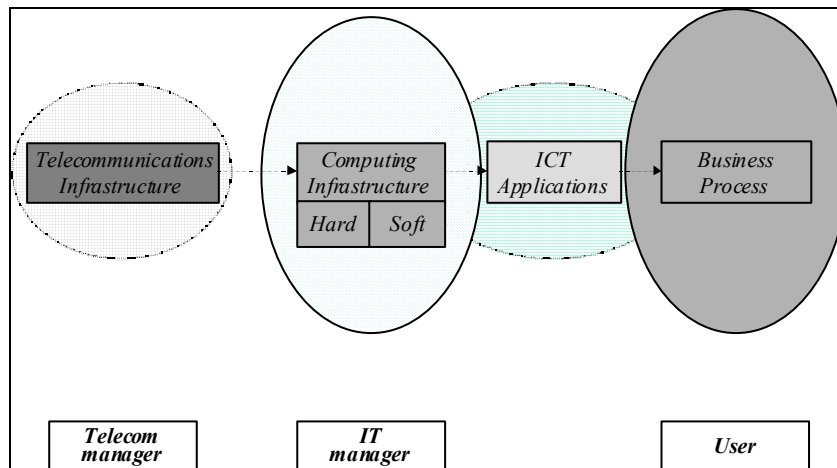
Figure 2: The main actors in the Buying Business Process of IT-based solutions

First, we describe the roles of Telecommunications manager and IT manager in the business process. Second, we focus on the difficulties of IT managers in managing data communication consumption and as a consequence, the emerging role of user department in the buying process. Third, we explain the growing demand from user department for new IT and telecommunications solutions. Finally, we clarify the different roles played by the three actors in the buying process.

2.1/ The growing role of the IT manager in the buying process

Over the last few years, we have observed the growing role of IT managers in the buying process of telecommunications services. For years, the roles and responsibilities of IT managers and telecom managers in the purchasing process of IT services have been clearly separated in the organisational structure of business customers. Telecommunications managers were in charge of data transmission and the IT managers of data processing. Telecommunications belonged either to the Accounting department or the General Administration Department, or constituted a stand-alone department. IT was generally an autonomous department, as was Accounting, Marketing or Production.

As for telecommunications managers, they managed the network infrastructure, mainly the capacity and the quality of service. They also managed the installed base of equipment and terminals, such as PBXs. The main objective was the optimisation (and often minimisation) of the use of an expensive and scare resource, i.e. the voice telecommunications infrastructure. They were mainly infrastructure-oriented. They managed the relationships with telecommunications companies.

As for IT managers, they were in charge of data processing within the organisation. They defined and managed the computer architecture as well as hardware and software equipment. The growing equipment rate of PC and devices within the company led IT managers to implement LANs (Local Area Networks) as a way of reducing costs and improving productivity. They were mainly applications-oriented. They managed the relationships with hardware providers and software companies.

However, both the needs for LAN interconnection and the development of new data applications have led IT managers to play a growing role in the management of data communications, either by integrating telecommunications managers into their own department or restricting their role to a buyer of infrastructure capacity, i.e. the clerical part of it. The role of the IT manager has been extended whereas that of the telecommunications manager has not changed, remaining focused on the management of infrastructure, mainly bandwidth and quality of service.

2.2/ The difficulties in managing data communications consumption

For Telecommunications managers it is increasingly difficult to manage the increased consumption of data communications required by users. Former research tends to demonstrate that it depends on the role given to end-users by telecommunications managers. From the results of a qualitative survey conducted in the fall of 1999 about the forecasting of data communications at business companies, we distinguished two types of telecommunications managers according to three criteria (Epinette and Vialle, 1999):
– the relationships with end-users,
– the use rate of basic services by end-users,
– and the need for competitive suppliers (price sensitivity).
The first type of Telecommunications manager defines himself as a "service provider" while the second may be considered as a "management controller".

"Service providers" are not really able to forecast the future demand for data traffic; they offer the users the training and any service they ask for, acting as service providers; they feel they are at a loss for they have no control over the development of uses.

In doing so, they do not know how the traffic is going to evolve. As one telecommunications manager stated, *"this is a sort of "Pandora's box"; once the users are equipped, you never know what they will do with it but you do know that you will see the data traffic growing tremendously. Then, your main job is to make sure your equipment can keep up with the demand"*. Thus, the main problem IT managers face is a lack of competitive offers that would allow them to better negotiate prices[3]

"Management controllers" are able to forecast the evolution of traffic; end-users are not equipped and telecommunications and IT managers avoid equipping end-users; there is then no unknown in the evolution for demand. Since they try to keep their traffic as low as possible by refusing the spread of equipment within the organisation, they feel a lesser need for competitive offers.

As stated by a respondent, *"we are able to forecast the data traffic for the next five years; users are not equipped since they do not know what is availlable and we do not want them to know. We don't want them to exchange silly messages or go on the Internet for personal purposes"*.

In either case, telecommunications managers felt that the main problem in evaluating the evolution for data traffic was a "cultural brake upon the use of IT solutions", a "resistance to organisational or individual changes" and the "lack of responsibility of the information managers". Finally, we observed that the role played by end-user was a strong incentive to trigger a process of needs recognition and eventually, a buying process.

2.3/ A growing demand from end-users for new solutions

For the last three years, we have surveyed the telecommunications and IT managers of large French accounts about the adoption behaviour of telecommunications innovations: successively, the adoption of fixed-mobile convergence, mobile Internet and high bandwidth data access. We found out that both telecommunications managers and IT managers were playing a less predominant role in the adoption of innovations as compared to the user departments.

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[3] At that time, competition was not sufficient enough on the French market to be able to offer a real alternative to the former monopoly. This situation may have changed since that time.

Whatever the innovation, we saw that the adoption behaviour was partly triggered by the end-users, leading the way in the adoption of such solutions. The demand from end-users was derived from three main stimuli: equipment rate, internal and external pressures, and competitive pressure. The growing development of Internet-based applications has exposed end-users to new opportunities, leading them to ask telecommunications and IT managers about new solutions, whatever the sources of exposure.

First, we saw that the equipment rate was a criterion to explain demand, especially when end-users are heavily equipped with IT devices (PCs, mobile phones, laptops, PDAs), etc.). They search for enhanced solutions either in terms of services or equipment. For instance, the growth of the use of mobile data applications is explained by the limitations of the current GSM voice service (no one to call or able to answer questions) or by the services users do not possess but which they imagine they could use. We observe top and middle management already equipped with a mobile phone were asking for convergence services from telecommunications managers, such as a single phone number (wired and wireless), a unified mail box (integrating fixed voice mail, mobile voice mail and e-mail) (Epinette and Vialle, 2000).

The same is true for mobile Internet, when we observed that employees already equipped with an Intranet and a mobile phone wanted mobile access to the Intranet through their mobile (Vialle and Epinette, 2001).

Second, there are pressures inside and outside the business company to use data communication services. Externally, customers and partners may implement applications and solutions (related to Customer Relationship Management, Executive Resource Planning or Supply Chain Management) that have an impact on the adoption of compatible applications for the users' business. Internally, top and middle management may give the impetus to develop and use new e-business applications, often in relation with organisational changes.

Finally, we found that competitive pressure is a strong incentive for the demand of new solutions. For instance, in the case of mobile Internet solutions, and in particular WAP-based solutions, we found in the banking industry that a marketing and sales department wanted a solution because the competitors already had it. The telecommunications and IT departments were obliged to deploy a solution similar to that proposed by the competitors.

End-users are more and more involved in triggering the decision-making process. Telecommunications and IT managers may not even be aware of the user's needs. This is more the case for the telecommunications managers, than for the IT managers. Telecommunications managers are only providing the "pipes" needed by IT equipment and applications to communicate, whereas IT managers are concerned with applications and as such are nearer to the users.

2.4/ Clarifying the roles in the business buying decision process

Based on former research, we can distinguish clearer task sharing between telecommunications and IT managers on the one hand, and functional managers on the other; the former runs centralised systems and applications while the latter runs specific applications. So the more functional an application the smaller the role of the telecommunications and IT managers is central in the buying process. For example, a survey conducted in 2001 about the management project of CRM implementation[4] showed that the

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[4] Etude "Baromètre du CRM®" (2001), Planetclient.com et POINT Information Systems, 50 pages, www.planetclient.com.

projects are managed by departments other than IT departments (57 % against 40%, respectively). CRM solution is dealt with by the marketing or sales department rather than by the IT department. As more and more applications are functional or task-specific, the role of the end-user is becoming more relevant. It does not mean that telecommunications and IT managers are not relevant, but rather that the end-user plays a crucial role in the first steps[5].

While end-users define functional needs and manage projects, telecommunications and IT managers have to prescribe technical solutions, decision-making criteria, choice of suppliers, compatibility and scalability of equipment or applications, all of the aspects which may disturb the technical infrastructure already used within the organisation. Since the end-users are not really interested in technological aspects (with the exception of the "image" or "symbolic" part of it), this explains why they would now rather deal with suppliers, who offer a functional solution to their "evoked problem", i.e. software providers, or xSP (all service providers[6]). Thus, end-users and Telecommunications managers or IT managers do not search for the same type of applications. Telecommunications and IT managers tend to adopt new solutions enabling them to reduce the cost-in-use or the overall costs, while end-users adopt well defined business-oriented solutions.

As a consequence, it appears that telecommunications and IT managers tend to play different roles according to the types of solutions to be implemented. They tend to play a central role in the buying process of centralised applications while they play a secondary role concerning specific applications. So, although they play a role in the decision-making either as an internal influencer, gatekeeper or buyer, they are no longer the only ones to trigger the process.

Yet, this does not mean they are not the relevant interlocutor for a telecommunications company's sales forces. On the contrary, they are still the decision-makers for the infrastructure matters. Therefore, they do have to be dealt with for the technical choice of new solutions because of the possible impact on the infrastructure. They are still the ones in charge of taking the technical day-to-day decisions. They still define general agreements and contracts for the technical aspects. However, they may not be the relevant interlocutor to initiate a buying process for new applications and services[7].

3./ Changes in commercial relationships

We have outlined three main trends that affects the commercial relationships established by telecommunications companies.

The first is a growing demand for solutions integrating telecommunications services, computing services and applications, and even content services. The second is that demand is increasingly applications-led, applications which are closely related to business processes. The third is the growing role of IT managers and functional user departments in the buying process, and particularly in the initial phases.

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[5] The fact that there are no IT managers on the boards of any French company, appears to us as an indication of the reduced role of IT manager within the firm. Moreover, the C.I.G.R.E.F. (French association of telecommunications and IT managers of large firms) stated two years ago that more and more IT-based applications no longer depend upon IT managers.

[6] XSP stands for all suppliers providing services such as Internet service or applications services, hosting services, business services, etc.

[7] In Vialle and Epinette (2001), we were wondered wether telecommunications and IT managers were relevant interlocutors for market studies about new telecommunications services with a strong functional component.

The first option considered by telecommunications companies is to position themselves as "integrators", in order to be in a position of power in a network of partners and be able to prescribe their resources as well as their partners' resources (Vialle 1996). This strategy involves some diversification and/or the federation of partners in order to provide the different resources to be integrated into a solution. It also means that the sales engineers dealing with business customers become consultants, able to integrate business processes with telecommunications and computing services. Finally, it is necessary for the sales engineer to develop relationships, not only with the telecommunications manager of the customer, but also with the IT manager and the user departments.

However, the implementation of this strategy has some significant drawbacks. First, the lack of available in-house resources for consulting: telecommunications people are competent in telecommunications, not necessarily in computing (although there is an increasing proximity between the two technologies), and are probably not experts in business processes. An extended diversification to acquire or develop extended competence would raise well identified problems such as financing, management, economies of scale and scope, or business conflicts. Second, telecommunications companies may not be able to raise credibility among customers because of their existing image, or the customers may prefer more independent and objective suppliers (Vialle 1996). Finally, this "relationships space" is already occupied by numerous suppliers that benefit from existing relationships and from their existing competence in consulting. For decades, IT managers have been used to buying computer equipment and software from computing suppliers. User departments as well have existing relationships with consulting firms, advertising agencies or information providers.

Therefore, telecommunications companies have recently developed a network of indirect distribution to complement their direct sales forces. Actors involved in relationships with the members of the buying centre whose influence is increasing (IT managers, users, industry advisors), can be in a better position to commercialise applications or solutions including a telecommunications component. Their role may be crucial in the early phases of the identification or recognition of needs, and establishment of characteristics and specification.

From our research, three main types of partners can be identified:
(1) partners involved in network integration and telecommunications consulting concerning site interconnection and local area networks (LAN),
(2) partners involved in applications solutions (equipment vendors, software companies, IT consulting, application service providers, industry-focused value-added resellers, outsourcers, etc…) incorporating a telecommunications component,
(3) global integrators and consultants, integrating IT consulting and business consulting.

The second, and especially the third type of partners are extremely useful for the introduction of new services and solutions, because they are able to demonstrate the business advantage of using data services, and to help telecommunications companies define "business-oriented solutions" instead of "technical-oriented solutions".

Partners can be further distinguished according to the market segments served. Large firms naturally rely on large (generally multinational) suppliers for network integration, IT systems and IT/business processes integration (such as Devoteam, Accenture, IBM Global Services or Cap Gemini Ernst & Young). Small and medium-sized companies are generally targeted by local/regional suppliers, web designers and industry value-added resellers.

Such a policy has also been implemented in the mobile data industry by all the communication companies. In the business segment, the telecommunications companies have

developed specific programs and structures to initiate and manage partnerships with third parties so as to permit the introduction of mobile Internet portals and services in the year 2001. For instance, Bouygues Telecom set up a partnership program to work closely with software companies so as to sell its Business Mobile Portal. The software company finds the lead, develops the IS application but in either case, directs its client to the mobile communication company for the mobile equipment and access services.

These partners do not have a homogeneous role and can cover different aspects of the sales process such as:
– to provide telecommunications companies with leads (contact provision),
– to prescribe telecommunications services to business customers (information),
– to integrate telecommunications services into their own solutions (product range),
– to maintain business customers' equipment (premises and after sales service).

Both options, direct "consulting" sales forces, or indirect forms of distribution, naturally involve considerable co-operation between partners in production and sales.

Conclusion

At the time when telecommunications were essentially concerned with the traditional voice telephony, telecommunications companies were characterised by a vertically integrated model, integrating network provision, service provision and the distribution of services. The combined trends of market liberalisation and convergence with computing and media, has given birth to a wide range of new services and applications and induced a network configuration of this industry (Vialle 1998).

In this paper, we have also outlined significant changes in the buying process of business customers, characterised by an increasing importance of the role played by IT managers and user department in this process, as demand is increasingly applications-led. More specifically, user departments appear to be playing a significant role in the initiation of buying processes for new services. Both changes in supply and demand bring about a strong interaction between value-creation networks and commercial networks, resulting in the emergence of direct and indirect forms of distribution for telecommunications services, that are characterised by an increasing share of consulting and integration in the sales process.

In the context of a depressed equity market, high debts and credit shortage, it could be expected that the vertical model will be further challenged. The large investments in infrastructures, particularly for third generation mobile (UMTS) networks, the regional or global expansion of activities, as well as major innovations in the field of services may lead telecommunications companies to focus on infrastructures and services. This could lead to the development of a distinct indirect distribution layer, that would fully benefit from economies of scale and scope as in other sectors of industry.

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