Received August 2000
Revised May 2001 and
September 2001

Options of strategic decision making in services

Tech, touch and customisation in financial services

Raija Järvinen and Uolevi Lehtinen
School of Business Administration, University of Tampere, Finland, and
Ismo Vuorinen
Pori School of Technology and Economics, Finland

Keywords *Strategy, Decision making, Service industries, Technology, Financial services, Finland*

Abstract *Service-marketing literature has traditionally built upon the combination of low technology and high interaction between service providers and customers in service delivery. However, many service organisations have started to utilise high-tech in their operations. More specifically, they are considering how to make their services available to a wide range of customers with the aid of technology. So far, only few empirically oriented studies on this trend can be found in service literature. In this article the topic is approached on the basis of both services marketing literature and an in-depth analysis of two case studies. The empirical evidence was gathered from two Finnish financial organisations, an insurance company and a bank, both having utilised technology in their service production and delivery. The consequences of these choices are evaluated and compared with each other. We conclude with a framework for strategic decision making, which ties together the dimensions of service type, technology and encounter. On the basis of our empirical cases, we suggest that there are numerous strategic options between the ends of each continuum of the framework, and in addition to advanced technology, service providers need to pay explicit attention to social aspects. The lesson we learned calls for more customer orientation when planning high-tech solutions in service operations, and taking a new attitude to segmentation.*

Introduction

In academic discussion (e.g. Heskett, 1986; Lehtinen, 1986; Lovelock, 1986, 1988; Brown *et al.*, 1994; Wikström and Normann, 1994) high-touch has traditionally meant that human interaction is an important part of service and each service includes individually provided elements. Yet Pine (1993) and Fisher (1997) have introduced the concept of mass-customised services, which are produced with the aid of technology without forgetting the traditional individual touch.

It is challenging to apply technology in ways that create synergy for service providers, their stakeholders and their customers. The movement from low-tech operations to high-tech operations is in line with this. But whether it is connected to low-touch as has been traditionally assumed in service literature (see, for example, Levitt, 1976; Chase, 1978; Lovelock and Young, 1979) or

European Journal of Marketing
Vol. 37 No. 5/6, 2003
pp. 774-795

0309-0566
DOI 10.1108/03090560310465143

high-touch (Berry, 1986; Heskett 1986; Brown *et al.*, 1994); or both is the issue we try to address using empirical data. So far, very little empirical research has been carried out on the topic. Therefore, Brown *et al.* (1994) encourage researchers to break out of the prevailing low-tech tradition in favour of high-tech services mixed with high-touch experiences.

We believe that the keys for making the right decisions about technology are to understand the service well enough to know which elements lend themselves to high-tech and to understand the market well enough to know which service elements require personal touch. Identifying and then implementing the optimum mix of both technology and individual touch is a strategic opportunity for many service providers today. This raises the issue whether service should be offered in standardised or in customised form.

Availability can be managed through alternative channels (Stern and El-Ansary, 1992) among which electronic channels are worth considering. Many service providers have connected their data systems with their customers (cf Normann, 1991), or built an electronic service bridge towards new market segments (cf Gordon and Fisk, 1987). Hence, it is of great relevance to discuss availability in connection with technology.

The main purpose of this article is to develop a framework that ties together the main strategic dimensions, and thus forms a basis for strategic decision-making in services. In our study we have followed abductive logic (Alvesson and Sköldberg, 1994), and hence the framework is the outcome of both literature and an in-depth analysis of two case studies. Neither literature nor case material alone would have provided the elements required for the framework.

The theoretical foundations of this article lie mainly in service marketing literature, even though the empirical cases deal with business-to-business relations, where, e.g. research based on the interaction and network approaches has resulted in significant contributions (see, for example, Easton, 1992; Ford, 1993; Håkansson and Snehota, 1995). The reason for this focus is our service oriented perspective, and changes in service with the aid of technology. As the business-to-business research refers mainly to manufacturing companies that supply physical goods, it mostly addresses different issues in utilising technology compared to service sector. However, we have linked our research with IMP-tradition whenever appropriate in light of the purpose of the article.

The empirical section describes and analyses two Finnish financial organisations, an insurance company and a bank, both of which have utilised technology in their service production and delivery. The financial sector in Finland is especially interesting in this regard because of large investments in technology and a pioneer position in many high-tech innovations. Because of the chosen focus, the theoretical section with the strategic dimensions is presented in the context of financial services.

Strategic service dimensions

Technology: low-tech and high-tech

In services marketing, high-tech may be applied in two phases: technology in service production and technology in service delivery, i.e. electronic channels. The two phases are often interwoven with each other. In our opinion, service production must to a large extent be automated before service providers can take advantage of electronic channels (Lehtinen and Järvinen, 1996; Järvinen *et al.*, 1996), as it is futile to deliver services through electronic channels if they have to be handled manually at the other end.

Lovelock (1995) warns against defining the concept of technology too narrowly, and therefore, we adopt the notion of the three key forms of technology by Heskett *et al.* (1990), namely:

(1) material technology, such as new chemical compounds;

(2) methods technology, such as new machines and ways of working; and

(3) information technology (IT) including computer hardware, software, cellular telephones, scanners, etc.

Especially, IT has changed daily operations in the financial sector, where it enables managers to plan, execute, and evaluate results with greater precision and speed, thereby improving effectiveness (cf Rayport and Sviokla, 1995) in forms of co-ordinating, measuring and controlling service processes.

Automated teller machines (ATMs) were among the first visible vehicles of service technology, but they were perceived almost as punishments among customers (Rayport and Sviokla, 1994; Lewis, 1985). Currently, banks are moving towards home and virtual reality banking with new activities, like personal financial assistant services (Mathe and Dagi, 1996). In our opinion, this success has been guaranteed by the banks' ability to train their customers to use new automated services, whereas Nivaro (1993) confirms that insurance-policy machines have not gained customers' acceptance.

From the strategic perspective, one of the main reasons for using technology is to make service operations more profitable and more feasible. This is largely achieved by streamlining and reorganising back-office functions (Mathe and Dagi, 1996). Even in the front line, new technology can provide more information more quickly to promote better customer service.

In spite of several success stories in utilising high-tech in service production and delivery (e.g. Rayport and Sviokla, 1995; Bessen, 1993; Hart, 1996) technology also brings disadvantages. Koepp (1988; see also Järvinen, 1998) argues that many service providers cut costs by replacing human faces, but new technology may reduce the perceived service quality in the eyes of customers and, as Cunningham (1995) argues in the case of insurance, increase workload of remaining personnel.

There have been arguments (Falch *et al.*, 1990) that face-to-face contacts will be less preferred in many services as soon as the new technology offers suitable

alternatives, e.g. combinations of picture, voice and text. The issue of electronic channels serves this trend well. What we call here an electronic channel includes distribution of services via digital television, telephone, facsimile and computerised environment (from personal computers to main frames). Although Internet has attracted an increasing amount of attention (see, for example, Armstrong and Hagel, 1996; Hoffman and Novak, 1996; Quelch and Klein, 1996; Spar and Bussgang, 1996; Clark, 1997; Ghosh, 1998), we prefer to emphasise that it is only one alternative among others. The prospect of a commercial revolution connected to Internet (see, for example, Spar and Bussgang, 1996) can and should, in our view, be applied to all kinds of electronic channels.

Electronic channels engage various business parties. In this article those parties represent service providers on the one side and intermediaries and customers on the other. The customers are final customers including both corporate and private customers. This leads often towards more integrated systems (see Hertz, 1992), in which the evaluation of joint technology and adaptation for the process in the electronic channels form the axis presented in Figure 1, which is further elaborated from Malone *et al.* (1987):

- unlinked applications, where one or both parties make their data accessible to the other party, but the connection does not function on an on-line basis;
- linked applications where both parties' databases are still separate, but a formal on-line mechanism passes information from one to the other; and
- shared applications where one database contains information for both parties.

However, electronic channels seem to cover more than a service delivery in many cases (see Evans and Wurster, 1997). Electronic channels keep customers away from the service facilities and at arms' length from service personnel. In such a situation, the outcome of the service act remains very important, but the process of service delivery may be of little interest, since it is invisible to final

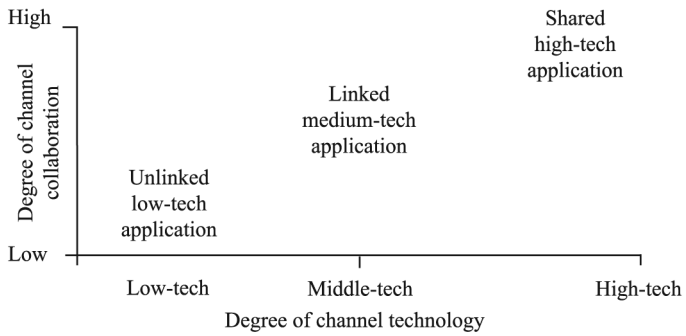

Figure 1. Classification of electronic channels

customers. From the above, we draw the conclusion that the total effect of electronic channels is a concern of both service providers and customers, and we have noticed that this often leads to completely new ways to offer and organise services.

The advantage of electronic channels lies in their ability to provide updated information quickly irrespective of time or place and at a low cost (Hyvönen, 1993, 1994; Clark, 1997; Ghosh, 1998). Open standards provide an opportunity for customers to collect, store and select information that is free to be used by anyone (cf Evans and Wurster, 1997; Hyvönen, 1994). Also the disadvantages are numerous: insecurity, risks, continuous need for updates, lack of rules and limited ability to punish those who violate the norms, e.g. theft and falsification of information (Spar and Bussgang, 1996; Clark, 1997). Prejudices and the abstract nature of channels also cause difficulties. Moreover, service providers dealing through intermediaries need to evaluate the importance of their current channel relationships against the advantages of establishing future direct electronic channels (Armstrong and Hagel, 1996; Ghosh, 1998).

Service encounter: low-touch and high-touch

Service encounter focuses on face-to-face interactions between customers and personnel in a service setting (Solomon *et al.*, 1985; Surprenant and Solomon, 1987; Bitner *et al.*, 1990; Brown *et al.*, 1994), and in many cases interaction is a major element of the service offered (cf Solomon *et al.*, 1985). Grönroos (1979, 1982) transferred the concept of interactive marketing to services with the aim of covering the marketing impact on customers during the service consumption process, when customers interact with various service systems, such as physical resources and personnel (see, for example, Grönroos, 1990, 1994). The customers' role as producers in the service encounter makes service unique, and therefore they have to be viewed as an integral part of the process (Bateson, 1989; Kelley *et al.*, 1990). In addition, there are attempts to include customers in the service organisation, at least on a temporary basis (Gummesson, 1994; see also, for example, Handy, 1990; Lovelock and Young, 1979; Quinn and Paquette, 1990), or to connect their resources with service providers (see Håkansson and Snehota, 1995).

Blois (1989) suggests that customers' perceptions of a service are tightly linked with personnel. If this is correct, the way customers perceive service encounter and how service production and delivery are organised cannot be considered in isolation from each other. This gives support to the idea of Quinn and Paquette (1990) about well-run service providers obtaining both optimal flexibility at the customer contact point and maximum "production" efficiencies when designing their systems properly.

Lovelock and Young (1979) point out that some customers resist all kinds of new technology replacing social contacts, and in many cases the acceptance of customers cannot be assumed when the changes concern service delivery.

Therefore, service providers should look at changes from the customers' standpoint to avoid resistance and failure. A longitudinal analysis by Bolton and Drew (1991) shows that changes over time in individual customers' ratings of service quality are sensitive to the effects of a service change. Moreover, the study of Proenca and Castro (1997) revealed that banking relationships contain complex interorganisational contacts at various organisation levels.

Personnel's positive attitude is the first step to learning and utilising new technology. The implications of technology for personnel should be education, greater empowerment and decentralisation at the contact level, and shift from routine tasks to customer interactions (cf Cornish, 1990; Quinn and Paquette, 1990). Many services are becoming easily exportable and service personnel can be located almost anywhere. According to the Telecommunications Survey (1995) the death of distance means that any activity that relies on a screen or a telephone can be carried out anywhere in the world. Young (1995) recommends this mode especially for insurance personnel: by connecting a laptop computer and a modem to a cellular phone, an insurance rep has access to corporate databases from almost anywhere, and insurance clerks can be moved to telework done at home or in local workshops.

Figure 2 classifies the variations of the individual touch. The continuum includes interaction with physical resources, mix of physical and human resources and human interaction. It is acknowledged that there hardly exist services provided by purely human resources, as most services contain at least one or more physical elements. Regarding physical resources, there may exist some, but the development of such systems always requires human resources. The issue is mainly a subject to the degree of physical and human resources in the continuum required for total service offering.

Figure 2 draws the attention to opportunities within the ends of the continuum. Call centres or help-desks are examples that are difficult to place at either end, as they allow human interaction, but the parties do not see each other face-to-face. Therefore, we suggest that they should be placed in the

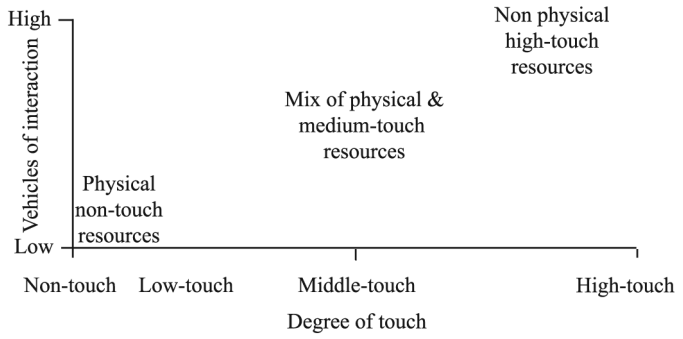

Figure 2. Classification of individual touch

middle and called middle-touch services. At the beginning of the continuum we have placed the non-touch alternative, which means that service providers and customers do not interact while customers are consuming services. This materialises through, e.g. loading data, pictures or programmes from service providers to customers' computers.

Service type: customised and standardised

The problem with the nature of financial services is that they vary from fairly simple to quite complex. Therefore, they are not easy to put into the same conceptual mode. The division into standardised and customised services offers one way of classifying them. Standardised usually implies a non-varying sequential process in service offering, in which each step is laid out in order and all outcomes are uniform. Customised usually refers to some level of adaptation or tailoring of service processes to suit individual customers (Shostack, 1989a; see also Välikangas and Lehtinen, 1994).

Customisation and standardisation lie at the opposite ends of the same continuum (cf Levitt, 1976; Lovelock, 1984), and they are closely related to the issues of technology and individual touch. Levitt (1972) suggests that the standardisation of a service can take three forms:

(1) substitution of technology for personal contact and human effort;

(2) improvement in work methods; and

(3) combinations of these two methods.

IT has been used especially to standardise services (cf Shostack, 1989b). However, standardised services do not necessarily mean mechanical services, although many service tasks are routine, allowing specific rules and standards to be easily established, e.g. opening bank accounts (Zeithaml and Bitner, 1996; Järvinen, 1998). Lovelock (1986) regards economic matters and adaptation by service personnel as main issues in customising services.

In our opinion, a single service can seldom be judged as standardised or customised, but rather they tend to contain both characteristics, and even the portion of each may vary from time to time or by customer segment. There are opportunities for a great variety of customisation even though they are based on standardisation with the utilisation of high-tech. In accomplishing this, enterprises generally obtain a strategic advantage not through traditional economies of scale, but through focusing on the smallest activity or resource units that can be efficiently measured and replicated. Sometimes operational and cost-based reasons underlie the solution to transform a high-touch service into a low-touch one provided that customers will be offered greater convenience. However, in self-operated services the utilisation of technology for its own sake in the service process is bound to be perceived as a deterioration in quality amongst many customers (cf Järvinen, 1998).

Case description and analysis

The empirical section consists of two cases: three insurance lines and one bank line. The basic reason for selecting these four lines was to achieve more extensive variation in dealing with the topic.

An insurance company was chosen for the following reasons. First, the high intangibility of insurance services materialises through an insurance policy that is a paper including a promise to pay if a certain contingency takes place (cf Majaro, 1982, 1985). Second, our case company (hereafter called InsCo) has recently invested in IT, although it has already been dependent on the computerised insurance registers for over two decades. To ensure its position in the market, InsCo started large development projects in 1994, the objectives of which were better utilisation of technology, value chains and more qualified personnel, but also productivity and quality. Moreover, the development of the electronic documentary channels formed a logical consequence to this strategy.

A bank was chosen as another case for the following reasons. First, it shares the high intangibility with insurance services (Majaro 1985). Second, high-tech bank services and electronic channels have arrived in such forms as bank-based credit cards, ATMs providing a variety of services, and home electronic banking opportunities with tips for cash management and investment services. All this has also been experienced by our bank case (hereafter called BankCo). Third, the changing behaviour of banks' customers together with the increasingly competitive environment has forced banks towards market-orientation (Wilson, 1980; Majaro, 1982; Lewis, 1985), as well as overall deregulation, and opening up markets for foreign banks.

Depiction of the data gathered and methodology used in the study is presented in Appendix 1.

Case 1: InsCo

InsCo is an insurance company grouping covering the entire spectrum of insurance services: non-life, life, travel and pension insurance. The parent companies of the group were already established in 1890 and 1891. InsCo Group's co-operation is based on shareholdings and agreements and it has a joint organisation that earned 1.060 million euros in insurance premiums in 1998. With the number of employees reaching 2,745 on average and with its own branch office network including around 90 offices, the group is the second largest in its branch in Finland (Annual Report, 1998).

We chose to study the following three insurance lines in which electronic channels were introduced first:

(1) The motor insurance line is an electronic documentary channel between InsCo as the service provider and car dealers as intermediaries concerning motor and comprehensive insurance.

(2) The travel insurance line consists of an electronic documentary channel between InsCo as the service provider and travel agencies as

intermediaries concerning travel insurance. The travel agencies represent well-known Finnish tour operators and have their own travel reservation system (TRS).

(3) The statutory workers' compensation insurance line covering two kinds of electronic documentary channel alternatives, Internet or electronic data interchange (EDI), offered by InsCo Group as the service provider to brokers, other intermediaries or corporate customers concerning statutory workers' compensation insurance.

All three electronic channels were tailored. Now insurance documents arrive at InsCo through electronic data networks linked directly to its computer systems. InsCo is still responsible for collecting insurance premiums, providing insurance policies and administering insurance registers, except in the case of travel insurance, where travel agencies themselves collect premiums and print insurance policies. Selling and underwriting the statutory workers' compensation insurance is a too complicated process to automate, and it therefore relies on individual experts and personal interaction with customers.

Consequences of technology. As a result of the study we may conclude that the movement to the electronic channel has affected each insurance line differently:

- The motor insurance line: routines became easier than before due to the electronic documentary system, but there were no other impacts on the business relationships with car dealers and customers.
- The travel insurance line experienced a total change of routines in offering insurance, among others they started to sell travel insurance actively, and customers settle all their affairs by one phone call. All details of the package tour, including insurance, are entered into the TRS and invoiced simultaneously.
- In the statutory workers' compensation insurance line the role of customers changed as customers started to enter data directly into data systems, i.e. customers actually do the work on behalf of InsCo, which guarantees correct and updated insurance registers without extra work. This decreased the amount of routines and enabled clerks to do telework.

Electronic channels concerned intermediary relationships. Insurance reps have become trainers who assist in insurance problems and educate dealers' and agencies' personnel to better serve their customers in all insurance issues. Their other primary task is to maintain social relationships with intermediaries, and in that way bolster intermediaries' willingness to recommend InsCo to their customers. In agency relationships the development was more dramatic: officers began to sell travel insurance simultaneously when booking tours instead of only sending insurance documents to customers.

Most insurance services are highly standardised, especially statutory ones (motor and workers' compensation insurance in our case), whose terms and conditions are specified by the law. For its part, travel insurance represents one of the simplest insurance allowing customers to choose from the selected variety of completely standardised alternatives.

Along with the technology development, insurance services have become more high-tech services employing advanced IT, especially in new service development or redesign (Appendix 2). Whether insurance services remain high-touch depends on the channel used, but the main rule still is that insurance services require personal contacts, at least by telephone. InsCo's contacts with dealer personnel and dealer personnel's contacts with customers have remained at the same level, but travel agency contacts have actually increased. In both lines InsCo's reps have kept their visit density at the earlier level. Concerning the third line, routine contacts have decreased, but the importance of sales and renewal meetings has increased. From the above, it can be concluded that insurance services have remained high-touch services.

Case 2: BankCo

BankCo is an independent middle-sized bank whose territory consists of 25 branch offices around one of the biggest cities in Finland. The bank was established in 1991 when six independent banks merged, but it originates from a local bank established in the 1930s. The bank is a member in one of the major bank groups in Finland. Its turnover was about 40 million euros with personnel of 245 in 1998. At the time of the interviews the bank was involved in organisational restructuring.

We studied the corporate banking line here called Banknet. Banknet was already introduced in the middle of the 1990s, and it consists of two alternative systems: either a software package installed in the customer's computer or a tailor-made EDI-type connection. The costs are calculated per month and per transaction basis. Customers feed transactions into Banknet freeing tellers from that routine. Automated checking compares ledgers and transactions and in-time statements of accounts are available on-screen. While electronic channels were emerging, statement of account was accepted as a legal receipt that further reduced the back-office load at both ends.

Currently BankCo seeks competitive advantage through a wide range of electronic services available any time and place connected to computer terminals and mobile phones. Besides, electronic channels will gradually replace ATMs, which need continuous maintenance and proved to be costly investments.

Consequences of technology. The consequences have been twofold: First, Banknet decreased the routines in the bank's back-offices and at customers' premises. Since then bank tellers moved to provide more individual and high-quality service in complicated bank affairs. On the other hand, if customers do

not pay any visits to their bank, the personal contacts are eliminated with a loss of loyalty. Thus, personal bank services are an essential part of BankCo's customer relationships, but customers have to pay for it. This led to the appointment of key account "managers", which increase the number of personnel. Waiting times for personal bank services supported this notion. Many customers preferred call centres, even though there was not enough personnel to meet this requirement properly.

Some tellers have moved towards customers, and in addition to visiting customers regularly they locate in the headquarters of corporate customers or in the big shopping centres with a hired information desk and ATMs. BankCo has not experienced telework, as it believes that the tellers must be available on the bank premises.

Even though Banknet guarantees the availability of most usual banking services 24 hours per day, BankCo is aware that its customers still expect individual service and long office hours. As a consequence, in 1998 BankCo started to extend its opening hours systematically even though this does not yet cover all its branch offices. The qualifications required have changed remarkably as tellers have moved from back-offices to the front-line and have become active sellers.

Many bank services are standardised and automated (see Appendix 2). This especially concerns transfers and other routines, which can be settled at a distance with the aid of Banknet. These services can with good reason be called high-tech and low-touch services. In addition, BankCo offers sophisticated services through Internet and customers are allowed to interact with these programmes providing individual loan calculations and investment portfolio suggestions. Even these services may be called high-tech and low-touch, because the personal contact is missing. On the other hand, the personnel is trained to provide more demanding and complicated bank services requiring personal contacts that may be called customised, high-touch services. In fact, there are two kinds of high-touch bank services, those that employ high technology and those that are still mainly manual (e.g. document service).

Summarising the cases

Movement to electronic channels. Electronic channels may provide substantial benefits to each party directly or indirectly. Direct benefits are time saved and errors avoided by eliminating double or triple feeding (cf Malone *et al.*, 1987), and reduced paper handling and clerical work (Malone *et al.*, 1989). Consequently, saving time and human resources was the main objective in both our cases. In addition, the economic benefits, especially personnel costs, play a major role in both banking and insurance industry.

The initiative for an electronic channel may come from any party. InsCo suggested the new system for the travel agencies, whereas the Government Registration Office was the active party in the motor insurance line. The

initiative for automating the statutory workers' compensation line came from inside InsCo. BankCo initiated the development of banking channels. In contrast to our insurance case, the electronic channels in banking are mainly standardised, i.e. all bank customers use the same system and adapt their activities according to BankCo's standards.

When automating their service processes, InsCo and BankCo were totally dependent on the technological development. All insurance registers and bank transactions are computer based, which means that every clerk and teller is practised in data processing and handling with the aid of work stations. For this reason, both InsCo Group and BankCo have arranged their own training programme for computerised environment.

Judged by the key forms of technology (presented earlier), the most important for InsCo was IT, which has only recently been followed by methods technology, whereas material technology is insignificant in the insurance business. BankCo's key forms of technology consist of IT and methods technology, which have been used simultaneously. Material technology has been utilised in BankCo in decreasing the amount of documents and receipts required. Connaghan (1995) has observed that as soon as technology has been brought in, it has an impact on every aspect of the company's operations, but far too often companies continue their functions as if they were operating in a manual work environment. This was partly experienced by InsCo as methods technology followed IT with a time lag, but almost avoided by BankCo because of simultaneous applications of IT and methods.

InsCo now shares unlinked application (see Figure 1) with its intermediaries and customers, but only partially because it covers insurance data only. As all parties consider their independence extremely important, they are not willing to unify their databases any further. There are no on-line connections, but instead data is transferred at certain time intervals. BankCo's stage is an on-line linked application, where information is delivered in both directions in time. We prefer to call it partially limited, as the data is customer specific, i.e. each customer is restricted to its own data, only some common information is available to all customers.

Implications on individual touch. InsCo Group and BankCo face different challenges in customer frequency. It is unusual that customers need an insurance company every day, which is the case in bank affairs. Even though the insurance intermediaries sell insurance every day, there is no need for extremely intensive electronic channel communication. On the other hand, banks have segmented their channels according to the services offered: routine services have been automated, but more complicated services are provided with high-touch. Lack of interaction affects customer loyalty, and in our opinion, worries about diminishing customer contacts are well founded. Both InsCo and BankCo face the questions of how to strengthen customer relationships and how to avoid the weakening forces in this respect.

It is usually believed that different kinds of electronic systems shorten the channels and lead to trading between service provider and ultimate customer. This has not yet happened in our case companies, but in the future, the revenues of intermediaries may decrease or they will be eliminated completely. However, if intermediaries can perform a different mix of services, they will continue to play critical roles (Quelch and Klein, 1996) and thus earn their position. The development may also decrease the number of branch offices, as already experienced by BankCo, but not so far by InsCo. The other target is to expand the access time. Through travel agencies and car dealers customers are able to handle their insurance affairs outside regular office hours. In addition, InsCo's call centre is open 12 hours a day. BankCo offers full-time access through Banknet and has extended the office hours by approximately two to three hours on two or three days a week.

Some insurance lines are so complicated that they cannot be sold without individual reps. Therefore, only part of the activities can be automated and changed to low-touch, but estimations of insurance cover and risk management, for example, involve more individual touch. On the other hand, customers are pleased to accept more standardised insurance services in order to make it easier for them to choose the most suitable alternative. This is especially true in travel insurance. From the above it follows that InsCo has to find a balance between standardised and customised insurance services. As regards to BankCo, the trend is towards more individual financial services offered by human tellers, whereas routines will be completely automated. On the basis of our two case companies we can conclude that it is not that simple to claim that high-tech always calls for low-touch, or that it is always worthwhile moving to high-tech, but maintaining high-touch. Rather, both alternatives are appropriate, but in different situations. This does not only depend on customer segment, since the same customers may one day choose high-touch service and another day low-touch service.

Implications on standardisation. All four lines studied provide standardised insurance or bank services and information on more sophisticated financial services. InsCo has less experience of electronic channels than BankCo, and therefore has not yet started to fully utilise them as an information media towards customers. On the other hand, even though the core services delivered through electronic channels are standardised, they may include a personal touch if customers ask for more detailed information for their decision-making or choose to combine electronic channel with another means of interaction. Appendix 2 gives examples of various dimensions of bank and insurance services.

InsCo Group has further plans to streamline its service chains and to continue to electronise the channels of other insurance lines, and BankCo will no doubt continue their restructuring programme by gradually decreasing the number of organisation levels. In both companies there will be less need for

back-office activities, but more need for expert activities and customer service. All these things together provide a challenge for personnel education and recruitment strategy: more experienced personnel are required, and will be achieved partly by in-house education and partly by new recruitment. Simultaneously, both case companies are trying to predict the future development in technology and customers' intentions. More than earlier, InsCo Group reps are training car dealers' and travel agencies' personnel and solving insurance problems. Thus, the role of insurance reps has changed along with electronic channels.

Framework and strategic options

Based on the theoretical and empirical material presented above, we integrate the various elements discussed in this article in a framework with three dimensions presented in Figure 3. It contains the following elements:

(1) the dimension of technology;

(2) service encounter; and

(3) service type.

It is noteworthy that the dimensions are not really orthogonal, but certain dependencies between them appear. For instance, the degree of standardisation is related to the degree of interaction. This depends on the type of service, too.

The framework presents representative alternatives between low-tech and high-tech and low-touch and high-touch: middle-tech and middle-touch. In addition, it draws attention to an alternative between standardised and customised service, which we call here partly customised service. We pinpoint that there are numerous alternatives between the lowest and highest values

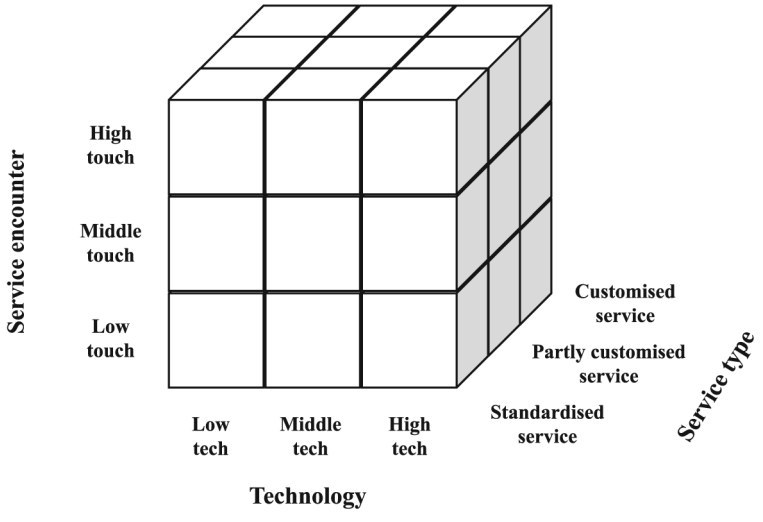

Figure 3.
Framework of strategic service dimensions

depending on the situation, as our cases have already shown. Consequently, any dimension actually is a continuum. It is our view that the different alternatives lying between the ends of the continuum are too seldom discussed in service marketing literature and practice.

The cube allows high-tech to be connected with either low-, middle- or high-touch service, and standardised, partly customised or customised services or a combination of them. Which alternative is best in the short range or in the long range depends on the strategic choice of the service provider, i.e. it is a strategic choice to stress overall efficiency followed by a decreased number of personnel and increased amount of self-service that leads to standardised services, instead of preferring customer orientation and individual service provided by qualified human beings to customers who value tailoring and personal interaction, and are willing to pay for it. Sometimes the company strategy may involve the capability to provide the whole scale of services if customers ask for them, but even in this case the alternatives available have to be prioritised.

We have raised the question whether moving from low-tech to high-tech calls either for low-touch or high-touch and more or less customised services. The lesson we have learned in the course of our research project concerns customer orientation. Our cases show that service providers tend to plan and execute high-tech programmes for internal reasons and do not regard customers as an important part of the project. The study by Keltner and Finegold (1996) confirms that banks have usually overemphasised the importance of technology. Moreover, the study by Paulin and Ferguson (2000) shows the importance of the social and interpersonal aspects of banking relationships, but the same study confirms that bankers believe in maintaining customer relationships mainly through new technology. However, Turnbull and Gibbs (1993) emphasise the importance of corporate banking relationships. In addition, there are cases confirming that without customers' acceptance any service provider will lose time and money with automated services and electronic channels.

Nowadays customers are active. They demand alternatives and have their own choice. Therefore, when planning new technological solutions and new service types it is important to find out what customers really want and seek the right solutions to fulfill their wishes. The main problem is that customers very rarely know for sure what they should or could expect. The service provider has to be some kind of a pioneer and recognise the needs before customers themselves do so. For example, customers cannot or should not know how to manage their insurance portfolio, or how to choose the best solution from the available financial investments. It is the task of the financial companies, and this forms the basis for their position as experts.

The technology used in services is a matter of company strategy containing both the elements that ought to be automated and those elements that may destroy the service concept if they are automated. Our empirical data support

the conclusion that the movement to electronic channels is not only a technical solution, but also contains social aspects concerning both personnel and customers. If customers are expected to change their behaviour, they have to accept the new service mode first. Therefore, companies in many service sectors need to start customers' training programmes along with personnel training programmes in order to create more positive attitudes towards new systems. This is a rather neglected issue in service marketing literature. Furthermore, customer preferences for electronic channels should be studied in order to reveal those issues that strengthen customer relationships in spite of less frequent customer interaction.

Many service providers, like banks and insurance companies, operate in mature markets, and even on those markets it is possible to mix services, products and ideas in ways that may first seem unrelated to the core transaction (cf Rayport and Sviokla, 1994). In our opinion, this may guarantee survival, but our main recipe is to connect together the development of new service types, new channel opportunities and customers' wishes. Years ago Finnish insurance directors predicted an increase in telephone-linked channels even though it called for the development of more standardised insurance services (Nivaro, 1993). So far, insurance companies have invested in call centres, but very little has been done for designing more standardised and simple insurance that will be fitted into new channels. It is also important to make customers' attitudes more positive towards the new channel opportunities. We note that electronic channels in insurance business are still in their infancy phase, whereas banks and their corporate customers are already in maturity phase. The next step is to automate the channel between banks and private customers, which has already started.

We agree only partially with Quinn and Paquette (1990) when they argue that a real success in services generally exhibits a unique blend: a distinctly structured technology system and a carefully developed management system to support it. We understand that banks and insurance companies rely on high-tech in order to achieve a more productive and efficient way of operations and to survive in tough competition (see Vuorinen *et al.*, 1998), but we cannot recommend this to be done at the expense of customers. "Customers should be perceived as profit drivers rather than products and transactions", as Paulin *et al.* (1997, p. 523) put it.

However, the variation in the utilisation of technology, employing an individual touch and degree of standardisation is also related to the specific service context. By this we mean that services are different and so are service sectors. In addition to the financial sector many other service sectors, such as travel, accommodation and entertainment, have been successful with utilising technology and building electronic channels, whereas some service sectors, such as hairdressing, legal services and kindergartens, have not much use for them.

Our cases provide evidence that high-touch has not disappeared and will not disappear from the service sector because of high-tech. Sometimes, low-touch is the choice that customers intentionally make. In other situations, the choice may be a high-touch one. In our opinion, this poses a major challenge to service providers requiring several differently operated channel alternatives instead of one. This leads us to our basic conclusion, namely, that service providers should offer several feasible combinations of technology, individual touch and customisation. In this connection, technology utilisation may also give support for increasing customisation and individual touch.

The development outlined above calls for a change in strategic marketing thinking. For instance, there is a need for a reconsideration of segmentation as a strategic tool. If segmentation is applied according to channels, the implications may be diverse and unpredictable. Some customers may become loyal to a single channel and thus "segment themselves" according to a certain channel, and others may become multichannel users. The increasing variety of service channels also encourages the choosing of the most convenient alternative available in a certain situation. Therefore, even a single service provider should be capable of managing several variations. We should remember that it is the customer who decides which degree along the continuum is preferred. This undermines the basic ideas of segmentation, that is, to classify customers as homogeneous groups and to provide the most suitable service for each group. Thus, segmentation becomes futile. Segmentation is further complicated by the general belief that customer segmentation in services is often more difficult than in the case of goods.

References

Alvesson, M. and Sköldberg, K. (1994), *Tolkning och Reflektion. Vetenskapsfilosofi och Kvalitativ Metod (Interpretation and Reflection. The Philosophy of Science and Qualitative Method)*, Studentlitteratur, Lund.

Armstrong, A. and Hagel, J. III (1996), "The real value of on-line communities", *Harvard Business Review*, Vol. 74, May/June, pp. 134-41.

Bateson, J. (1989), "Perceived control and the service encounter", in Bateson, J. (Ed.), *Managing Services Marketing*, Dryden Press, Chicago, IL, pp. 112-21.

Berry, L. (1986), "Big ideas in service marketing", in Venkatesan, V., Schmalensee, D. and Marshall, C. (Eds), *Creativity in Services Marketing: What's New, What Works, What's Developing*, AMA, Chicago, IL, pp. 89-92.

Bessen, J. (1993), "Riding the marketing information wave", *Harvard Business Review*, Vol. 71, September/October, pp. 150-70.

Bitner, M.J., Booms, B.H. and Tetreault, M.S. (1990), "The service encounter: diagnosing favorable and unfavorable incidents", *Journal of Marketing*, Vol. 54, January, pp. 71-84.

Blois, K.J. (1989), "The structure of service firms and their marketing policies", in Bateson, J. (Ed.), *Managing Services Marketing*, Dryden Press, Chicago, IL, pp. 522-31.

Bolton, R.N. and Drew, J.H. (1991), "A longitudinal analysis of the impact of service changes on customer attitudes", *Journal of Marketing*, Vol. 55, pp. 1-9.

Brown, S.W., Fisk, R.P. and Bitner, M.J. (1994), "The development and emergence of services marketing thought", *International Journal of Service Industry Management*, Vol. 5 No. 1, pp. 21-48.

Chase, R.B. (1978), "Where does the customer fit in a service operation?", *Harvard Business Review*, Vol. 56, November/December, pp. 137-42.

Clark, B.H. (1997), "Welcome to my parlor", *Marketing Management*, Vol. 6 Winter, pp. 11-25.

Connaghan, M.D. (1995), "Who can help my agency redefine our workflows", *Best's Review P/C*, November, p. 96.

Cornish, F. (1990), "Building a customer-orientated organization at Citibank", in Boyle, D. (Ed.), *Strategic Service Management – Beyond the Moment of Truth*, Pergamon, Oxford, pp. 55-7.

Cunningham, S. (1995), "It's time to fine-tune the automation process", *Best's Review P/C*, November, p. 78.

Easton, G. (1992), "Industrial networks: a review", in Axelsson, B. and Easton, G. (Eds), *Industrial Networks: A New View of Reality*, Routledge, London, pp. 1-27.

Evans, P.B. and Wurster, T.S. (1997), "Strategy and the new economics of information", *Harvard Business Review*, Vol. 75, September/October, pp. 71-82.

Falch, M., Henten, A., Nielsen, F. and Skouby, K.E. (1990), "International liberalisering av telekommunikation" ("International liberalisation of telecommunication"), DATE-rapport 1, Lyngby.

Fisher, M.L. (1997), "What is the right supply chain for your product?", *Harvard Business Review*, Vol. 75, March/April, pp. 105-16.

Ford, D. (Ed.) (1993), *Understanding Business Markets*, Academic Press, Cambridge.

Ghosh, S. (1998), "Making business sense of the Internet", *Harvard Business Review*, Vol. 76, March/April, pp. 126-35.

Gordon, A.S. and Fisk, R.P. (1987), "Electronic service delivery: design issues", in Surprenant, C.F. (Ed.), *Add Value to Your Service*, AMA, Chicago, IL, pp. 137-41.

Grönroos, C. (1979), *Marknadsföring av Tjänster. En Studie av Marknadsföringsfunktionen i Tjänsteföretag* (*Marketing of Services. A Study of the Marketing Function of Service Firms*, with English summary), Akademilitteratur, Stockholm.

Grönroos, C. (1982), *Strategic Management and Marketing in the Service Sector*, Publications of the Swedish School of Economics and Business Administration, Helsinki.

Grönroos, C. (1990), *Service Management and Marketing*, Lexington Books, Lexington, MA.

Grönroos, C. (1994), "From marketing mix to relationship marketing: towards a paradigm shift in marketing", *Asia-Australia Marketing Journal*, Vol. 2 No. 1, pp. 9-29.

Gummesson, E. (1991), *Qualitative Methods in Management Research*, Sage, Newbury Park, CA.

Gummesson, E. (1994), "Service quality and productivity in the imaginary organization", paper presented at the 3rd International Research Seminar in Service Management, Aix-en-Provence, 24-27 May.

Handy, C. (1990), *The Age of Unreason*, Harvard Business School Press, Boston, MA.

Hart, C.W. (1996), "Made to order", *Marketing Management*, Vol. 5 No. 2, pp. 11-23.

Hertz, S. (1992), "Towards more integrated industrial systems", in Axelsson, B. and Easton, G. (Eds), *Industrial Networks: A New View of Reality*, Routledge, London, pp. 104-28.

Heskett, J.L. (1986), *Managing in the Service Economy*, Harvard Business School Press, Boston, MA.

Heskett, J.L., Sasser, E.W. and Hart, C.W.L. (1990), *Service Breakthroughs: Changing the Rules of the Game*, The Free Press, New York, NY.

Hoffman, D.L. and Novak, T.P. (1996), "Marketing in hypermedia computer-mediated environments: conceptual foundations", *Journal of Marketing*, Vol. 60, July, pp. 50-68.

Hyvönen, K. (1993), "Electronic markets – available for consumers", *Sähkömarkkinat – Tarjolla Kuluttajien Käyttöön*.

Hyvönen, K. (1994), "Electronic trading – benefits, problems and risks for consumers", *Sähköinen Kaupankäynti – Edut, Ongelmat ja Riskit Kuluttajille*, National Consumer Research Centre, Helsinki.

Håkansson, H. and Snehota, I. (1995), *Developing Relationships in Business Networks*, Routledge, London.

Järvinen, R. (1998), *Service Channel Relationships: The Dyadic Relationships Between Service Producers and Service Intermediaries*, Acta Universitatis Tamperensis, Tampere, No. 625.

Järvinen, R., Lehtinen, U. and Vuorinen, I. (1996), "The change process of industrialisation, electronising service channels and redesigning organisation in the financial sector from the productivity viewpoint", paper presented at the 2nd International Research Workshop on Service Productivity, Madrid, 18-19 April.

Kelley, S.W., Donnelly, J.H. Jr and Skinner, S.J. (1990), "Customer participation in service production and delivery", *Journal of Retailing*, Vol. 66, Fall, pp. 315-35.

Keltner, B. and Finegold, D. (1996), "Adding value in banking: human resource innovations for service firms", *Sloan Management Review*, Fall, pp. 57-68.

Koepp, S. (1988), "Why is service so bad? Pul-eeze! Will somebody help me?", in Lovelock, C. (Ed.), *Managing Services: Marketing, Operations and Human Resources*, Prentice-Hall, Englewood Cliffs, NJ, pp. 208-15.

Lehtinen, J.R. (1986), *Palvelujen Laatupainotteinen Markkinointi (Quality Oriented Services Marketing)*, QualityTampereen Yliopisto, Tampere.

Lehtinen, U. and Järvinen, R. (1996), "Electronizing distribution channels: the change process of industrialization, electronizing channels and renewing organizations in service sector", in Ropo, A., Eriksson, P. and Hunt, J. (Eds), *Global Perspectives on Processual Research on Management and Organization*, Series C6, University of Tampere, Tampere, pp. 95-115.

Levitt, T. (1972), "Production-line approach to service", *Harvard Business Review*, Vol. 50, September/October, pp. 41-52.

Levitt, T. (1976), "The industrialization of service", *Harvard Business Review*, Vol. 54, September/October, pp. 63-76.

Lewis, B.R. (1985), "Marketing bank services", in Foxall, G. (Ed.), *Marketing in the Service Industries*, Frank Cass, London, pp. 61-76.

Lovelock, C.H. (1984), *Services Marketing*, Prentice-Hall, Englewood Cliffs, NJ.

Lovelock, C.H. (1986), "Marketing of services", in Buell, V.P. (Ed.), *Handbook of Modern Marketing*, McGraw-Hill, New York, NY, pp. 5.1-5.14.

Lovelock, C.H. (1988), "Classifying services to gain strategic marketing insights", in Lovelock, C.H. (Ed.), *Managing Services: Marketing, Operations and Human Resources*, Prentice-Hall, Englewood Cliffs, NJ, pp. 44-57.

Lovelock, C.H. (1995), "Technology: servant or master in the delivery of services?", in Swarz, T., Bowen, D. and Brown, S. (Eds), *Advances in Services Marketing and Management*, Vol. 4, JAI Press, Greenwich, CT, pp. 63-90.

Lovelock, C.H. and Young, R.F. (1979), "Look to customers to increase productivity", *Harvard Business Review*, Vol. 57 No. 3, pp. 168-78.

Majaro, S. (1982), "Insurance, too, needs marketing", in Majaro, S. (Ed.), *Marketing in Perspective*, Allen & Unwin, London, pp. 193-207.

Majaro, S. (1985), "Marketing insurance services: the main challenges", in Foxall, G. (Ed.), *Marketing in the Service Industries*, Frank Cass, London, pp. 77-91.

Malone, T.W., Yates, J.A. and Benjamin, R.I. (1987), "Electronic markets and electronic hierachies", *Communications of the ACM*, pp. 484-97.

Malone, T.W., Yates, J.A. and Benjamin, R.I. (1989), "The logic of electronic markets", *Harvard Business Review*, Vol. 67, May/June, pp. 166-9.

Mathe, H. and Dagi, T.F. (1996), "Harnessing technology in global service businesses", *Long Range Planning*, Vol. 29, No. 4, pp. 449-61.

Nivaro, H. (1993), "Vakuutusala lain ja kilpailun välissä" ("Insurance between law and competition"), *Fakta*, Vol. 9/93, pp. 40-4.

Normann, R. (1991), *Service Management*, John Wiley & Sons, Chichester.

Patton, M.Q. (1990), *Qualitative Evaluation and Research Methods*, Sage, Newbury Park, CA.

Paulin, M. and Ferguson, R.J. (2000), "Business effectiveness and professional service personnel: relational or transactional managers?", *European Journal of Marketing*, Vol. 34 No. 3/4, pp. 453-71.

Paulin, M., Perrien, J. and Ferguson, R.J. (1997): "Relationship strategies and their fit with service-oriented management processes and organizational culture: frontline personnel and senior management perspectives", in Mazet, F., Salle, R. and Valla, J.-P. (Eds), *Interaction, Relationships and Networks in Business Markets, 13th IMP Conference, Lyon*, 4-6 September, pp. 507-27.

Payne, S. (1980), *The Art of Asking Questions*, Princeton University Press, Princeton, NJ.

Pine, B.J. II (1993), *Masscustomization – The New Frontier in Business Competition*, Harvard Business School Press, Boston, MA.

Proenca, J. and Castro, L.M. (1997), "The complexity of business relationships in banking and financial services. a case study", in Mazet, F., Salle, R. and Valla, J.-P. (Eds), *Interaction, Relationships and Networks in Business Markets, 13th IMP Conference, Lyon*, 4-6 September, pp. 315-41.

Quelch, J.A. and Klein, L.R. (1996), "The internet and international marketing", *Sloan Management Review*, Spring, pp. 60-75.

Quinn, J.B. and Paquette, P.C. (1990), "Technology in services: creating organizational revolutions", *Sloan Management Review*, Winter, pp. 67-78.

Rayport, J.F. and Sviokla, J.J. (1994), "Managing in the marketspace", *Harvard Business Review*, Vol. 72, November/December, pp. 141-50.

Rayport, J.F. and Sviokla, J.J. (1995), "Exploiting the virtual value chain", *Harvard Business Review*, Vol. 73 November/December, pp. 75-85.

Shostack, G.L. (1989a), "Service design in the operating environment", in Bateson, J. (Ed.), *Managing Services Marketing*, Dryden Press, Chicago, IL, pp. 233-41.

Shostack, G.L. (1989b), "Service positioning through structural change", in Bateson, J. (Ed.), *Managing Services Marketing*, Dryden Press, Chicago, IL, pp. 242-56.

Silverman, D. (1994), *Interpreting Qualitative Data: Methods for Analysing Talk, Text, and Interaction*, Sage, London.

Solomon, M.R., Surprenant, C., Czepiel, J.A. and Gutman, E.G. (1985), "A role theory perspective on dyadic interactions: the service encounter", *Journal of Marketing*, Vol. 49, Winter, pp. 99-111.

Spar, D. and Bussgang, J.J. (1996), "The Net", *Harvard Business Review*, Vol. 74, May/June, pp. 125-33.

Stern, L.W. and El-Ansary, A.I. (1992), *Marketing Channels*, Prentice-Hall, Englewood Cliffs, NJ.

Strauss, A. and Corbin, J. (1990), *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*, Sage, Newbury Park, CA.

Surprenant, C.F. and Solomon, M.R. (1987), "Predictability and personalization in the service encounter", *Journal of Marketing*, Vol. 51, April, pp. 86-96.

Telecommunications Survey (1995), "Communicating freely", *The Economist*, 30 September, pp. 39-40.

Turnbull, P.W. and Gibbs, M.L. (1993), "Marketing bank services to corporate customers: the importance of relationships", in Ford, D. (Ed.), *Understanding Business Markets*, Academic Press, Cambridge, pp. 359-77.

Vuorinen, I., Järvinen, R. and Lehtinen, U. (1998), "Content and measurement of productivity in the service sector: a conceptual analysis with an illustrative case from the insurance business", *International Journal of Service Industry Management*, Vol. 9 No. 4, pp. 377-96.

Välikangas, L. and Lehtinen, U. (1994), "Strategic types of services and international marketing", *International Journal of Service Industry Management*, Vol. 5 No. 2, pp. 72-84.

Wikström, S. and Normann, R. (1994), *Knowledge and Value: A New Perspective on Corporate Transformation*, Routledge, London.

Wilson, R. (1980), *The Marketing of Financial Services*, MCB University Press, Bradford.

Yin, R.K. (1990), *Case Study Research: Design and Methods*, Sage, Newbury Park, CA.

Young, R. (1995), "New cellular technology creates mobile office", *Best's Review P/C*, October, pp. 92-4.

Zeithaml, V.A. and Bitner, M.J. (1996), *Services Marketing*, McGraw-Hill, New York, NY.

Appendix 1

The primary data source of this study consists of interviews with the key officers (altogether 12 persons in the two case companies), among them a bank manager, regional managers, claims managers, a training manager and insurance reps responsible for the above mentioned activities. Each respondent was interviewed separately by using structured interview forms, containing mainly open-ended questions. The purpose of open-ended questions is to allow the respondents freedom to discuss any ideas they may think of and to respond in their own terms. The structured mode makes the interview systematic and the necessity for interviewer judgement during the interview is reduced (Payne, 1980; Patton, 1990). The interviews were held in June-July 1994, April 1995 and February-March 1996, and some follow-up questions were asked in the period May-August 1996. The follow-up interviews emphasised the changes that occurred during the follow-up period, and the additional information gathered was used to complement the first interviews. In the insurance case, the interviews were partly retrospective, i.e. collecting historical information, and partly follow-up interviews as the electronising process and experiences were monitored from 1994 to 1996 by several cross-sectional interviews. In the bank case there was only a single cross-sectional point of time, when the retrospective historical and the current data were gathered and the forecasts were discussed. Later, some free discussions and newspaper articles about BankCo were used to complement the interviews.

The secondary data were gathered by interviewing various representatives of some insurance intermediaries and the material provided by InsCo Group and BankCo including reports, in-house newsletters, bulletins and customer journals. The secondary data cover the years from 1992 to 1998. The purpose of the secondary data was both to complement the primary data and to confirm the primary data (see, for example, Yin, 1990; Gummesson, 1991).

The primary and the secondary data were analysed by organising and coding followed by process descriptions and analyses (Patton, 1990; Strauss and Corbin, 1990; Yin, 1990; Silverman, 1994). This step also required interpretation, i.e. going behind the descriptive data. Here we followed the guidelines by Patton (1990): evaluating significance to what was found, offering explanations, drawing conclusions, extrapolating lessons, making inferences, building linkages, attaching meanings, imposing order, and dealing with rival explanations and data irregularities as part of testing the viability of an interpretation.

Appendix 2

Service dimension	InsCo Group	BankCo
Standardised service	Travel insurance	ATM transactions
Partly-customised service	Statutory insurance	Loan application
Customised service	Unit-linked insurance	Investment portfolio
Non-touch service	Perpetual insurance	Loan payments annuities
Low-touch service	Travel insurance (Internet)	ATM transactions
Middle-touch service	Travel insurance (call centre)	Loan management
High-touch service	Risk management	Investment portfolio
Non-tech service	Perpetual insurance	Archives of signatures
Low-tech service	Travel insurance	Document service
Middle-tech service	Motor insurance	ATMs
High-tech service	Life insurance	Home electronic banking

Table AI.