Chapter 1 Service Innovation and Business Models

H. Bouwman and E. Fielt

Western economies are highly dependent on service innovation for their growth and employment. An important driver for economic growth is, therefore, the development of new, innovative services like electronic services, mobile end-user services, new financial or personalized services. Service innovation joins four trends that currently shape the western economies: the growing importance of services, the need for innovation, changes in consumer and business markets, and the advancements in information and communication technology (ICT).

Service innovation is believed to deliver competitive advantage to economies as a whole as well as to individual companies. In this chapter, we introduce and discuss service innovation and argue that, in order to realize service innovation, it is also necessary to look at the business models of the services in detail. Business models help design viable and feasible services by taking into account relevant customer needs and requirements, technical enablers and technological feasibility, organizational resources and capabilities, and financial arrangements. Moreover, it is also possible to incorporate innovation in business models.

This chapter is structured as follows. We begin by looking at service innovation and defining the core concepts, after which we discuss the importance of service innovation, and examine relevant drivers and trends. Next, we address services and service innovation in greater detail, and discuss design approaches that are relevant from a service perspective. In the final part of this chapter we connect service innovation and development to business model design and innovation.

1.1 Services and Innovation: A First Positioning

Before going on to discuss the relevance of service innovation, we want to provide a definition of services and innovation. In economic literature

products cover both goods and services. Within marketing, a product is described as anything that can be offered to a market for attention, acquisition, use, or consumption, in order to satisfy a want or need (for example, Kotler, 1988). Traditionally, a distinction is drawn between services and physical products (or goods), by stressing the intangible nature of services. According to Grönroos (2007, p. 52), a service is 'a process consisting of a series of more or less intangible activities that normally, but not necessarily, take place in interactions between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems'. Services are, at least to some extent, produced and consumed at the same time. Customers to a greater or lesser extent participate in the service production process. In other words, producers and consumers create a service together. Because services involve a considerable amount of human activity, they rarely adhere to a predefined process. Services are perceived as the outcome of a process (the service product) as well as the process it self. Generally speaking, products contain elements of both goods and services in varying degrees. The term (total) offering, or total/integrated customer solution, is used to emphasize the fact that a mix of goods and services is required to satisfy the want or need of a customer, for example, a copying machine with a service contract. Although products (i.e. things) and services (i.e. processes) are fundamentally different, they are intimately and symbiotically linked (Shostack, 1984).

The concept of innovation is an important element of the work by Schumpeter (1934), who argued that innovation serves to create wealth through fulfilment of customer needs with five different types of innovation: new products, new methods of production, new sources of supply, exploration of new markets and new ways to organize business. In more recent literature, innovation is related to technological as well as organizational and institutional innovation. In mutual interaction, these forms of innovation constitute the basics of the innovation process, and are conceptualized as systems of innovation (Hekkert, Suurs, Negro, Kuhlmann, & Smits, 2007). Systems of innovation are analyzed at a national level, as technological systems and as sectoral innovation systems. According to the system of innovation approach, innovation takes place in complex environments characterized by dynamic interactions between institutions and organizations that affect the development of innovations. This implies a shift in vision with regard to innovation from a centralized inward-looking, closed approach mainly driven by technical innovations to an open innovation approach (Chesbrough, 2003). Open innovation is characterized by a sharing of knowledge, critical resources and capabilities within and across the boundaries of organizations, and it is enabled by

institutions in an open network environment, allowing for the emergence of new technologies, products, services, processes as well as management practices and business models. There is a growing realization that innovation is interdependent in each of these domains: service innovation requires innovation in business models, while product innovation is directly related to service innovation, and process innovation leads to innovations in business models. Consequently, innovation can seldomly be restricted to the product or service offering or the delivery process, but also involves the way organizations collaborate and the supporting information and communication platforms and architectures.

1.2 The Importance of Service Innovation and Services R&D

As far as national economies and individual companies are concerned, service innovation is a prominent issue. Developments at macro and micro-level are interrelated. Off-shoring services and business processes to India, for example, has implications for individual firms as well as for national economies. For a long time national innovation policies have focused exclusively on supporting technological innovation in manufacturing firms, to a large extent ignoring innovation that took place in the services industry. It is increasingly recognized, not only by national governments and service firms, but also by manufacturing firms, that services, service innovation, growth of and employment in services industry are important economical drivers. Manufacturing firms are finding out that a combination of technological innovations and innovation in services can provide a competitive edge, an example of which are services enabling people to update the software of their domestic appliances or online photo albums with a camera. There are a number of trends that indicate why it makes sense to look at service innovation:

- *Services dominate advanced western economies such as the EU and US.* Because services constitute the main growth sector in advanced economies, productivity growth in services is an important element of overall economic growth. In addition, service innovation is currently growing rapidly in most EU countries, (and even faster in the US, *Reneser*, 2006), and services account for a majority of employment and new job creation in western industrialized countries, as well as increasingly in developing countries, specifically in the off-shoring countries.

- *The need for competitiveness in EU services*. As a result of the new European services directive and other actions towards the internal services market, there will be an increase in competitive pressure in the service industries and, most likely, the need for service innovation. The new emerging economies are also shifting their activities towards services.
- *Innovation in services is poorly understood and less 'visible in current statistics'*. Most of the 'official R&D' in services is recorded in computer and related services, telecommunications and R&D services. Service firms are less likely to engage formally in service innovation. Often, investments by service firms in service innovation are not officially recorded because they take place outside R&D or innovation departments, for instance in marketing or in service personalization.

All in all, the sheer size of the services sector in the overall economy, their potential in creating economic growth and welfare (through considerable opportunities for productivity gains) motivates the interest in service innovation. The *European Commission* (2003) has emphasized the relatively low productivity and performance of many services sectors, while O'Mahony and Van Ark (2003) have pointed at the limited use many services in Europe make of ICT. Nevertheless, due to the as yet small but rising share of services in business (technological) innovation expenditures, policy-makers as well as decision makers in the manufacturing and service industry seriously need to reconsider their innovation policy and strategy, and to focus on service innovation, if only because investments in innovation by private service firms in the US are considerably higher than in Europe.

From a micro-economic point of view, the *Reneser study* (2006) has shown that service firms, i.e. firms whose main focus is on services, like banks and telecommunication operators, are beginning to tackle service innovation more energetically. Nevertheless, the main focal points of service innovation and the way it is organized, budgeted and managed are designed in a diverse way and there is considerable variety among the particular service firms. Based on the Reneser study, we can draw the following conclusions:

- *Service innovation strategy*. Increasing competitiveness and customer needs are important drivers for service innovation. A dedicated long-term service innovation strategy (and hence management) at management board level is rare. There are few formalized approaches to deriving service innovation strategies. Although open innovation models

feature quite prominently in most cases, there is considerable room to improve collaboration within service firms as well as between service firms and research organizations. In most cases, cooperation with regard to service innovation is poorly developed.

- *Service innovation approach*. Although most service firms have some form of structured approach to service innovation, service innovation is less formalized, more dispersed and less explicitly managed and funded. In some service firms there are high levels of technological R&D as well as technology-enabled, mostly ICT-based, innovation, in addition to service delivery and organizational innovation. Formalized, service-only innovation is the exception rather than the rule. In practice, important service innovation activities are hidden behind labels like business development, service improvement, personalization, et cetera, without being recognized as service innovation. Service innovation is often hidden in client-specific solutions.

- *Service management and development methods*. In about half of the Reneser cases more generic formal management methods were used to manage service innovation portfolios, and at project level about half of the firms involved also used more formalized (mostly rudimentary) models for new service development, mainly based on product development tools. However, none of the firms used service-specific design models, methods, or tools, such as service design, service blueprinting or service engineering, or tools like Quality Function Deployment (QFD), Structured Analysis and Design Technique (SADT) or Failure Mode and Effect Analysis (FMEA) in the service domain.

- *Innovation culture and learning*. Creating an innovation-oriented culture that is in sync with service innovation (in firms, industries and society as a whole) is seen as the key to fostering competitiveness successfully. There is huge interest in and potential for cross-firm and cross-industry (lateral) learning, as well as a need for more fundamental research in the service innovation domain.

- *Use of innovation policies and schemes*. Few large service firms are connected to the innovation policy scene (apart from those that themselves conduct extensive technological R&D). Existing innovation schemes are of limited value to most service firms and most of them find it hard or unappealing to gain access to or take part in them. At the same time, nearly all the analyzed companies have no internal management structure to support the systematic acquisition of funded innovation projects, or broadly supported models for collaboration with research institutions that are active in the service innovation domain.

These conclusions from the Reneser study make it clear that much progress can still be made in the service innovation domain, and that service innovation deserves the attention of managers and scientists alike. In the next section we take a closer look at the service innovation drivers and trends at a business level.

1.3 Drivers and Trends for Service Innovation

Because of increasing competition and more demanding customers firms have to innovate their services. Demographic (e.g. ageing population), socio-technical (e.g. market-readiness for new technology) and socio-economic (e.g. income-level, attention to environment and sustainability) trends influence the needs and priorities of consumers. Idenburg (2005) addresses a number of specific consumer trends: individualization, self-chosen collectivism, informalization, cultural diversity, intensivation, and feminization that affect the need for new service concepts, for instance self-service or community based servicing.

At the same time technical developments offer opportunities for service innovation. Every business depends on the exchange of information and the use of information and communication technologies. New techno-logical developments enable the 'blow-up' of the richness/reach trade-off (Evans & Wurster, 1999). Information and communication technologies help distinguish the information world as separate 'marketspace' from the physical marketplace (Rayport & Sviokla, 1994) and make it possible to exploit virtual value chains (Rayport & Sviokla, 1995). Technological developments like the digitization of information, the increased processing capacity of computer chips, miniaturization and increased mobility of devices, the use of sensors and location technologies, increased inter-operability between services, security, and natural interfaces (Bouwman, Van den Hooff, Van de Wijngaert, & Van Dijk, 2005), enable mature architectures and platforms for knowledge sharing, collaboration, and electronic commerce transactions, anywhere, anytime.

In addition to consumer needs, service innovation is to a large extent driven by competitive strategies. There are some risks involved in adopting a strategy that focuses on service innovation. Services, like information, are easy to copy, while they have the highest impact on value creation when they are successful, as is witnessed by the emergence of giants like Amazon or Google. Furthermore, although new product breakthroughs increasingly depend on non-product characteristics, such as complimentary or auxiliary services, core services themselves also require innovation.

Service innovations that cannot be copied have to be based on unique technical features and require unique capabilities and resources available to the firm or the network of firms that provide the service, for instance highly trained employees or specific technologies, such as search engine technologies. System failures in the service innovation domain occur when firms and employees do not have the proper knowledge, skills and competencies, or the network that may provide them with access to the proper intellectual, technical or financial resources and capabilities. Moreover, firms may not be aware of these gaps in capabilities and resources, or they may be unable to identify the actual need customers have for specific services.

Next, the individual user influences the way new services are created and incorporated into their day-to-day routines. Service innovation is to a large extent user-driven, and directed towards providing a specific user experience. Service innovation is an interactive process in which multiple actors, including consumers, play a role. Service innovation is about co-creation, i.e. users providing feedback with regard to existing services and suggesting alternatives, or even developing their own services or content. Intensified interaction with customers will improve the effectiveness of service innovation. The major issue is how to move from personalized services to asset-based services, i.e. services that are reusable and scalable, and that allow for replicative use. However, technology-based services may cause companies to lose touch with customers, which mean they lose an important source of information for service innovation (Matthing, Kristensson, Gustafsson, & Parasuraman, 2006).

With the growing importance of services, service innovation becomes a more important element in the innovation strategy of a firm, which means that more capabilities and resources have to be made available. Some companies, for instance mobile telecom operators, invest in technical R&D as a driver for service innovations. Firms in the financial service industry try to understand opportunities offered by Web 2.0, or internet-enabled social networks like MySpace. Some service firms have technological R&D investment levels comparable to or even above the levels of manufacturing firms (Howells, 2006). In fact, major firms with a manufacturing background, like IBM and Océ, are developing into service solution providers and are among the first to invest in services innovation in a more formalized way (Meiren, 2006). Other service firms benefit from service innovation performed by others, for instance by making use of white labels in the insurance industry.

Service innovations are driven by much more than R&D alone and often need to be combined with new concepts, new ways of interacting with clients and new kinds of service delivery by (networked) organizations.

This requires a more rational approach to services. The development of new services should move from trial and error towards a more systematic approach to design and control. Service firms discover that service design and development is ill-structured and time-consuming, while time pressure is high (short time to market), knowledge regarding service innovation is tacit and hardly formalized, hardly supported by relevant tools, and customer orientation is hard to guarantee (Simons & Bouwman, 2005). To be successful and create value, firms have to develop service innovation methods and tools. Before we can discuss service innovation and design in greater detail we have to take a closer look at service characteristics.

1.4 A More Detailed View on Services

There are four basis characteristics of (consumer) services that are often emphasized in defining services (Grönroos, 1992):

- *Intangibility or non-material*. The acquisition of services does not result in ownership like in the case of physical products, although it results in a right to receive a service. Services are ideas and concepts that are part of a service delivery process itself. Services are non-physical.
- *Inseparability*. Production and consumption take place at the same time. Services, in contrast to physical products, cannot be stored. Significant parts of the service process depend on the interaction between producer and customer, and the information the customer provides. Most of the time customers are present while the service is produced or their presence is mediated by channels like the Internet, e-mail or telephony.
- *Heterogeneity*. Service outcomes and processes are hard to standardize. Quality control and homogenizing services before service delivery is impossible, in contrast to the kind of quality control we find with physical products. Setting quality standards is, however, helpful. Services can vary in quality and breadth, and they may even fail in the presence of the customer. The evaluation of the quality of a service, in terms of outcome and process, depends on the customer's individual and subjective expectations.
- *Perishability*. The service cannot be transferred or resold. If not utilized, the capacity to deliver the service is wasted, for instance in the case of consultant time or movie tickets. The offering itself and the resources needed to deliver the service are not wasted, but have to be made operational in order to deliver the service again.

Although we initially presented services by profiling services versus products, and by stressing the intangible versus the tangible nature, the distinction between products (goods) and services is open to debate. The distinctions between tangible and intangible, homogenous and hetero-geneous, separated and simultaneous production and consumption, non-perishable and perishable, an object and an outcome or process, value created during a production process or value created in the interaction between producer and consumer, and transfer of ownership versus no transfer of ownership, is blurring. Instead of drawing a distinction between goods and services, it makes more sense to see them as the extremes of a *goods-services continuum*. On the one hand the goods are only delivered, while on the other hand only services are being produced (Vargo & Lusch, 2004a, b). The distinction between services and goods is not as strict as we suggested earlier.

Mostly services require physical products for their production or usage. An air transportation service, for example, requires an aircraft. Moreover, services can use physical evidence, for example a physical airline ticket. Customers can have problems with the mental representation of goods, while services, on the other hand, can to a certain extent be sampled before consumption, for instance judging the quality of the food in a restaurant based on the appearance of the restaurant. Goods are more and more branded, and a brand name in itself is intangible in nature. Moreover, many products are only instrumental to a problem that a customer wants to solve as well. Utensils are used for home improvement, cars are meant for transportation, security software – which is intangible in nature – is bought to prevent possible problems, et cetera.

Inseparability is also open for discussion. Many services are provided in the absence of the customer, for instance cleaning services and product maintenance. Moreover, products are customized on the basis of preferences expressed by customers and delivered just in time to reduce or even avoid inventory costs. Products are becoming more heterogeneous. Although standardization is in the interest of producers, consumers want products that are tailored to their preferences. Using information and communication technology, services can be standardized and tailored to customer needs, deepening customer relationships and enabling mass customization. Manufacturing companies gradually shift towards services. The imperish-able nature of goods is also open to debate: fashion becomes outdated, food can rot; product life cycles are becoming shorter and shorter. On the other hand, the resources and capabilities needed to produce services do not necessarily perish, although capacity has to be available.

If we take things one step further, we could argue that everything provides a service. A broader and more inclusive definition describes

services as 'the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity or the entity itself' (Vargo & Lusch, 2004a, b). This definition sees service provisioning as a dominant logic that includes tangible output (goods). Grönroos (2007) refers to the service perspective as a strategic approach by firms based on either a core service or a core product. Grönroos emphasizes that value is created in the value-generating processes of customers and that providing a service means supporting a customer's activities and processes. Customers want solutions to function as services for them. This preference can be offset by a lower price or a technologically more advanced solution.

The basic characteristics of intangibility, inseparability, heterogeneity, and perishability, affect the development and delivery of services with respect to customer participation and service quality and experience. Services must allow for customer participation (Grönroos, 2007). This requires making clear in what way customers are involved in the front office as well as the back office process. The customer, as co-producer of services, is an integral part of the service delivery process, and participates actively in that process. Because users are also co-creators of services, they are also a very important element of the service innovation process. The perception of the service quality and customer satisfaction are both influenced by the service process (i.e. functional quality), as well as by the outcomes of the services process, i.e. the service delivered to the customer (i.e. technical quality) (Grönroos, 2007). Because users are an integral part of the service delivery process, the user experience of a service is an important issue. For example, a day out at Disney's magic kingdom is more likely to be defined by its designers and its visitors as a magical experience than six rides and a burger in a clean park (Clark, Johnston, & Shulver, 2000). According to Pine and Gilmore (1999), user experience plays a decisive role in which suppliers customers prefer. Customers want more than 'just' a product or service: they want an experience that makes a lasting impression. The traditional focus on cognitive evaluation needs to be extended to include service-elicited emotions and experiences (Edvardsson, Gustafsson, & Enquist, 2006).

1.4.1 Types of Services

Services can be characterized in a number of ways. The most important distinction is between core services and support services. A core service is a supplier's main business, whereas a support service is what makes a core

service (or product) possible and competitive. Support services have the potential to enhance the user experience of a core service. For instance, the core service of MSN messenger is text-based communication combined with online presence. Support services are, for instance, profile matching, price comparison and emoticon trade. Core products or services are supplemented by 'peripheral', 'auxiliary' or 'hidden' services (e.g. the way questions are answered or information is provided, service recovery procedures, directions for consumption of the core offer, etc.). These are services that the end-user typically does not see (Grönroos, Heinonen, Isoniemi, & Lindholm, 2000; Normann, 2000). 'Auxiliary services' are, therefore, often non-billable, and although they are not primarily what the customer pays for, they have a large impact on customer satisfaction and the effectiveness of the sales cycle (Grönroos, 2000).

Service typologies can be made on the basis of specific characteristics, for instance the degree of labour intensity, i.e. comparing labour costs with capital costs, for instance in the case of auto repair services versus IT services. Services can also be defined based on the level of interaction and customization, for instance service in retail versus services delivered by lawyers, doctors and architects. Another distinction may be related to the recipient of the service, i.e. people, for example health care and entertainment services, or objects (things), for example dry cleaning. The service can be continuous, i.e. electric utility or police, or discrete, for instance cell-phones or season tickets. Some services require subscription or membership, i.e. frequent flyer programs or insurance, while others are more informal in nature, i.e. the use of a public highway or pay phone. Services may be available at a single site, i.e. theatre or barber shop, or on multiple sites, i.e. mail delivery. Services may require customers to be mobile, i.e. theatre, bus services, or they may require the service provider to be mobile, for instance taxi, mail delivery. Services may have to cope with peak demands that will cause delays, for instance telephony and electricity, or peak demands that exceed capacity, like movie theatres or transportation. Services can be directed at the consumer or business market, they can be industrial services related to operations and maintenance or they can be information-based. Services can be classified according to domains like transportation, hospitality, government, financial, entertainment, professional services, IT services, industrial services, et cetera, or they can be based on self-service concepts and the use of hard- and software, or involve other persons at the moment of service delivery.

1.4.2 Electronic Services

As we mentioned a number of times earlier, services are more and more enabled by information and communication technology. Since the emergence of telecommunications, data networks, Internet and, most recently, mobile Internet, services are becoming even more virtual. These virtual services, which are provided via the Internet, are referred to as electronic services. Van de Kar (2004) defines an electronic service as 'an activity or series of activities of intangible nature that take place in interaction through an Internet channel between customers and service employees or systems of the service provider, which are provided as solutions to customer problems, add value and create customer satisfaction.' Two common conceptualizations of the technology-mediated nature of electronic services that emerge are electronic services as information services and electronic services as self-service (Rowley, 2006). Hofacker, Goldsmith, Bridges, and Swilley, (2007) discuss three types of electronic services: (1) complements to existing offline services and goods, (2) substitutes for existing offline services, and (3) uniquely new core services. These electronic services have characteristics that are found both in goods and services, and they also have some unique characteristics of their own (see Table 1.1).

The major difference between electronic services and many traditional services is the role people play in the service delivery process. An electronic service is not delivered by humans but by software programs via computer

Table 1.1. Distinguishing between goods, electronic services, and services (Hofacker et al., 2007)

Goods	Electronic services	Services
Tangible	Intangible, but need tangible media	Intangible
Can be inventoried	Can be inventoried	Cannot be inventoried
Separable consumption	Separable consumption	Inseparable consumption
Can be patented	Can be copyrighted, patented	Cannot be patented
Homogeneous	Homogeneous	Heterogeneous
Easy to price	Hard to price	Hard to price
Cannot be copied	Can be copied	Cannot be copied
Cannot be shared	Can be shared	Cannot be shared
Use equals consumption	Use does not equal consumption	Use equals consumption
Based on atoms	Based on bits	Based on atoms

hardware and communication networks. This has major implications for the service characteristics. Electronic services can be accessed anytime and anywhere. Electronic services are information-intensive: digital information plays a key role and is very easy to duplicate and transfer. The role of the customer is also different in the case of electronic services: customers play a more active role via self-service. Electronic services are less personal and use websites, web forms and/or email. No personal relationship between the customer and the company is required. Electronic services can adapt to the customer via (predefined) options for personalization by the customer or customization by the provider. With electronic services, (unexpected) exceptions are not possible, because the rules are set by software and hardware. Electronic services can be consumer services, for instance services delivered by the media industry, but also services as developed by users themselves and are labelled with Web 2.0. But also eHealth, ePayment services, marketplaces, eTravel, distant education and eLearning, et cetera are services that are provided via the Internet or via mobile networks. Mobile services are a specific subset of electronic services. A mobile service is a service that is offered via mobile and wireless networks. This assumes mobility on the part of the user of the services, the devices or applications. We will discuss mobile services in more detail in Chap. 4.

Although electronic services are an example of pure play – complete digitization of the service channel – in practice we see that *multi-channel* approaches are far more common (Simons, 2006). Firms use multiple channels to deliver services, and look for synergy between channels as well as channel coherence. Channels have to cooperate to maximize overall customer value in such a way that the strengths of each channel are used and the various channels complement each other. A seamless and consistent customer experience across the channels will evoke customer trust, which will reinforce the relationship. From a cost savings perspective it is also crucial to strive for synergy effects between the various channels. We adhere to the narrow definition of channel synergy (Power, 2000) which emphasizes reusing assets to minimize costs.

To summarize, electronic services make it possible to provide services anytime and anyplace. Especially, information-intensive services, as distinguished from more labour-intensive and personal types of services, benefit from the emergence of advanced information and communication technology. Self-service supported by the appropriate software and hardware allow customers to deal with services on their own conditions.
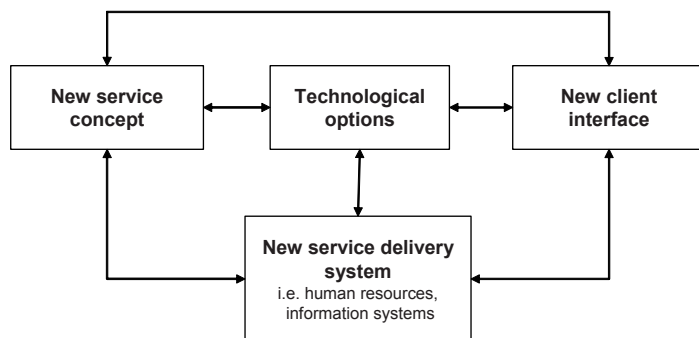
1.5 Service Innovation

Information and communication technology has driven service innovation by providing new information and communication services and by enabling innovation in other services. There has been a shift in thinking about service innovation over the years. According to Salter and Tether (2006), this evolution started with neglect, and then moved via assimilation and distinctiveness, to synthesis. For a long time, service innovation has been considered minimal or none-existent. In the past, the focus has especially been on technology-driven innovation in manufacturing, and the impact of (information) technologies on service processes, resulting in what was called the reversed product life cycle (Barras, 1986, 1990). New technologies lead to process innovations that increase the efficiency of the services provided. Next, service quality is increased due to radical process innovation, and finally new services emerge. In time, service innovation began to receive more attention, and the distinctiveness of services as opposite to products was increasingly emphasized in service innovation (Gallouj & Weinstein, 1997). Nowadays, the focus is increasingly on the complexity and multi-dimensionality of modern services and manufacturing, including the bundling into 'solutions' or 'offerings' (Salter & Tether, 2006).

Two approaches have played a central role in service innovation. One has a strong service focus, ignoring technological developments and focusing on service-delivery process, like skills of the workforce and cooperation between departments within the service provider firm. These types of innovations in services are directed at the quality of the service delivery process and at optimizing customer satisfaction. As a result, for a long time service innovation was associated with incremental changes, like stores staying open longer, service quality based on a personal approach, or loyalty programs. In the alternative approach to service innovation, the focus is on the role played by technology, especially on information technology. To a large extent, this approach can be attributed to the increasing importance of information and communication technology, which support services and service innovation. For the first time, information and communication technology, more specifically the Internet, made it possible for service innovations to open up entirely new markets, for instance Netscape, Google, eBay, SAP, Adobe, EasyJet, Starbucks, and Skype. These new technologies made it possible to move away from the labour-intensive, interactive services that were set in a physical environment. Thanks to information and communication technology, services delivery can be asynchronous and does not require the presence of a service delivery staff. It became possible to separate services and to

deliver them at a distance. 'Technology has transformed many former inseparable services into services that can be consumed any time or place' (Berry, Shankar, Parish, Cadwallader, & Dotzel, 2006, p. 57). Moreover, ICT adds intelligence to the service delivery process, based on back office applications (e.g. Customer Relation Management – CRM – , tracking and tracing, multi-channel approaches), redefining the client interface by adding online communication and distributions modes, as well as service marketing (e.g. long tail marketing). Information becomes available that may support innovation in specific service functions along the service process. ICT drives both radical and incremental service innovation.

According to Berry et al. (2006), service innovation should take a holistic approach. They discuss nine drivers for service innovation, i.e. a scalable business model, comprehensive customer experience management, investment in employee performance, continuous operational innovation, brand differentiation, an innovation champion, a superior customer benefit, affordability and continuous strategic innovation. Similarly, Den Hertog (2000) discusses four dimensions that are particularly relevant to service innovation: service concept, client interface, service delivery system and technological options (Fig. 1.1). We extended the service delivery system dimension of the original model by not only including human resources but information systems as a resource as well. The characteristics and capabilities of information systems, as enabled by information and communication technology, play a key role in innovation of electronic and mobile services. Often, service innovation involves a combination of the various dimensions; this means the connections between the dimensions (interactions, complementarities) are also important. For example, downloadable ringtones require an electronic communication network for service delivery. Particular service innovations are then characterized by the combination of innovations in one or more of the four dimensions.

Fig. 1.1. Four dimensional model of service innovation (based on Den Hertog, 2000)

It is clear both from the discussion on innovation in general and from the specific discussion on service innovation that it is important to look at innovation from various perspectives (e.g. customer, service provider, technology) and that a number of disciplines (e.g. marketing, management, finance) have to contribute to understanding and supporting service innovation. We address this when we discuss our business model approach to service innovation (Chaps. 2 and 3), and apply this approach to mobile services. First, we take a closer look at the development and design of new services.

1.6 New Service Development and Design

A new service can be defined as 'an offering not previously available to customers that results from the addition of offerings, radical changes in the service delivery process, or incremental improvements to existing service packages or delivery processes that customers perceive as being new'(Johnson, Menor, Roth, & Chase, 2000). In marketing literature, *New Service Development* usually refers to an overall process of developing new service offerings, while service design refers to the development of blueprints for the service outcome and process. These blueprints can be conceptual (high-level) or operational (low-level) in nature. 'Better service design provides the key to market success, and more important, growth' (Shostack, 1984). Although new service development attracts more and more attention from researchers and practitioners, methodologies and tools that are specific for service development are limited, and depend on product design and engineering. Success factors for new service development are related to the nature of the service, the product-market characteristics, the project synergy, the development process and innovation culture (Johnson et al.). A systematic and formal new service development process is recommended by all studies into the relevant success factors. How such a new service development process should be structured depends on, amongst other things, the type of service innovation and the kind of service (e.g. Fähnrich & Meiren, 2006; Johnson et al.).

Existing literature (Goldstein, Johnston, Duffy, & Rao, 2002; Johnston, 1999; Menor, Tatikonda, & Sampson, 2002; Tax & Stuart, 1997) agrees on the limited contribution made by design methods to service definition and design. Generally speaking, we encounter an engineering-based approach and a marketing-oriented approach. The engineering-based approach starts from traditional product design and then moves on to more specific service design literature, such as service system planning and service blueprinting.

The marketing-oriented approach starts from the service as a process that involves the provider, the user and the quality of the service. The service concept definition, the augmented service offering, and quality function deployment are examples that we will discuss briefly. According to Fähnrich and Meiren (2006), services with a low contact intensity and a low variety may be suitable for the kinds of methods that are used in traditional product development, while the other kind of services require methods that are specifically targeted at services.

Cross (1994) provides an overall framework for describing a product design process. His traditional *Fundamental Engineering* design process covers all aspects of the design process, from problem definition to detailed design. His approach provides a rigorous sequence of steps towards a final result. Service engineering follows the same approach (Luczak, Gill, & Sander, 2006). According to Clausing (1994), technical design principles address only part of the overall design problem, ignoring the customer interaction and service concept. Clausing calls this 'partial design'. According to services literature, partial design and local sub-optimization are among the highest risks in designing and implementing a total service offer and system (Ramaswamy, 1996).

The second method we discuss is *Service System Planning*. Service System Planning adopts a broad approach. The service system is made up of (1) the customer, including needs and expectations, (2) the service concept, (3) the service delivery system, (4) the way the service is perceived by service providers as well as customers, and (5) corporate culture and values, which guides the long term service orientation (Normann, 2000). The design and evaluation of new (additional) services can be aided by looking in turn at the various service system components, and by asking how they will (or should) be affected. Heskett, Sasser, and Schlesinger (1997) provide a lower level insight into the service system, by zooming in on the service delivery system as such. The design of service delivery systems should encompass the roles people play (service providers), technology, physical facilities, equipment and service delivery processes. Assessing these components yields a useful checklist that can prove helpful in the evaluation process by listing the various components and by asking how they will be affected by the new service. However, this method offers no guidelines on how to manage the design process, and nor does it include a rigorous follow-up process that will lead to a finished design. It offers no new design that is based on customer requirements.

The most methodical, process-oriented and design-oriented approach is *Service Blueprinting* (Shostack, 1984). Shostack argues that, compared to the manufacturing systems design, service systems design suffers from a number of problems. Shostack mentions difficulties involved in describing

and documenting the processes involved, which lead to intangible results; trial and error approaches that fail to include tests with regard to completeness, rationality and need fulfilment; the absence of a department supervising the design; a gradual approach to quality controls; and a tendency for systems to be described rather than visualized. Where services are concerned, the traditional flowcharting methods that are typically used in service blueprinting are limited and continue to form the core of the analysis. They do not, for example, chart customer involvement in the service provision, and they provide little insight into the organizational structure and its significance in terms of service processes.

In strategic service marketing, Clark et al. (2000) have introduced an approach based on *Service Concept Definition*. Key elements of a service concept are customer value, form and function, customer experience, and customer and supplier outcome. This approach explicitly defines the service concept as a bridge between the 'what' and the 'how' of a new service. The Service Concept Definition is a 'detailed description of the customer needs to be satisfied, how they are to be satisfied, what is to be done for the customer and how this is to be achieved' (Goldstein et al., 2002 p. 123). In this approach, there is also a direct connection between company strategy and customer value. Dividing a service into the 'what' and 'how' makes it possible to identify service elements, to check them against customer requirements or needs, and then to design and deliver those elements. However, it is a rather limited design methodology. Many detailed steps still need to be made before the concept is ready to be implemented. Managing a design process involves more than having a concept. In fact, this approach at best provides 'a direction or point at the horizon for the design outcome' (Simons & Bouwman, 2004, p. 4), and it certainly does not set an agenda for concrete actions.

Grönroos' *Augmented Service Offering* (Grönroos, 2007) uses the service concept as input. According to Grönroos, to develop a service concept, it is necessary to identify the intentions of the organization. The service concept is the starting-point for the development of a basic service package that describes the bundle of services needed to fulfil the needs of customers or target markets. This bundle consists of core services, facilitating (essential) services (and goods) and supporting services (and goods). In addition to the service package, which is targeted primarily at the service outcome, the augmented service offering also addresses the service process. The process consists of three basic elements (from a managerial point of view): accessibility of the service, interaction with service organization and consumer participation. Finally, the service provider has to manage the company's image and communication, including such activities as sales, advertising, sales promotion and

communication. However, while this approach offers a more detailed description of the process involved in moving from a more general level towards a more detailed and implementable design, it lacks the methodological support needed to map customer benefits with service activities, and to make and assess service design choices.

Methodological support for design choices is a key element in *Quality Function Deployment* (QFD) (Clausing, 1994; Cristiano, Liker, & White, 2000; Hauser & Clausing, 1988). QFD is a systematic, matrix-based, visual approach to designing quality products and services. It is based on the principle that the quality of a product should be specified as early as possible in the life cycle. Quality requirements are obtained directly from the customers. A list of customer priorities, in words used by the customers, is used as an explicit yardstick throughout the design process. Moreover, possible service functions and solutions are prioritized according to a matrix that is grounded in customer priorities and connected to competitive scores. QFD uses a series of interconnected matrices that establish the quality relationships between higher-level (i.e. product or service level) design activities and their associated lower-level (i.e. sub-process, subsystem etc.) activities. The higher-level matrices can be used in planning the design concept, whereas the lower-level matrices are useful in detailed design and post-implementation monitoring and improvement. The design standards established early on are carried through to later matrices (Herzwurm, Schockert, Dowie, & Breidung, 2002). The use of these matrices enables and stimulates communication between multi-disciplinary development teams.

Service design becomes even more complicated when one considers the possibilities of bundling several, more or less independent services into a service bundle. Chiasson (1999) presents a model for *Service Bundle Design*. Chiasson argues that bundling requires a formal process to structure the economics and strategic value of the bundle and to deliver it to the market. Issues he considers relevant are the strategic intent of the service bundle, in terms of market and product strategy, and its functional objectives. These functional objectives are discussed for channels, marketing, support systems, billing and telecommunication network consideration. Trade-offs in the design of bundles are a key issue for bundles to meet a short time to market, as well as to be profitable and consistent.

Although all of the methods we discussed so far have several shortcomings (in terms of rigor, customer-oriented prioritizing and the evaluation of service alternatives), they also have characteristics that are beneficial to certain aspects of the design process. Fundamental Engineering makes design steps explicit; service system planning provides a useful checklist of the main components involved in the service process;

Service Blueprinting contains a genuine process for developing a service (concept) design, providing a visualization of the service system as an integrated whole, including participants and processes. Service Concept Definition lists the necessary service elements, as well as integrating business strategy, more specifically supplier requirements, with customer needs. The Augmented Service Offering integrates the service as outcome, with the service as process. QFD, finally, emphasizes the need to use a complete set of specifications that are traceable to customer requirements, and that optimize communications within interdisciplinary design teams. If there is one thing all the more marketing-oriented methods have in common, it is that they all emphasize the importance of focusing on the customer throughout the design process and including communication in the service design. None of the formal service development methodologies take the fact that the customer will increasingly be a co-creator of innovative services into account. Moreover, these methods have little or no attention for the technologies that enable the new services as well as the organizational setting and the financial issues at stake. Typically, these issues are discussed in business models.

1.7 From Service Innovation to Business Models

As we discussed above, there is a shift from product oriented innovations towards service innovations, and service innovations are driven by much more than technical R&D alone, specifically with regard to information and communication technology. They often need to be combined with new concepts, new ways of interacting with clients and new service delivery organizations. This is particularly relevant when it comes to the introduction of new electronic and mobile services, where there is also a strong influence of information and communication technology as driver and enabler. Moreover, new service development is rarely a well-structured and systematic process, in which methodologies and tools are used in a coherent and systematic way. Due to the diverse nature of (mobile) service innovation, the lack of coherent methodologies, as illustrated before, and fundamental research that drives and evaluates service innovation, methods and tools, there is still little insight into the critical design issues and success factors involved.

   Starting from an open innovation perspective (Chesbrough, 2003), we believe that service innovation is only possible in an open networked environment in which multiple actors collaborate in delivering innovative services, each contributing their own specific resources and capabilities.

However, before this can be accomplished, the underlying business models have to be attractive to all the actors involved. The business model addresses the creation of value via service innovation and the capturing of a portion of that value by mediating between customer needs, organizational resources and capabilities, financial arrangements, and technological possibilities (Chesbrough & Rosenbloom, 2002). Business models are not only relevant for analytical purposes, they also help design viable and feasible services by taking into account relevant customer needs, technological feasibility, required and available resources and capabilities, and suitable financial arrangements. The choice in favour of a more physical product-oriented or service-oriented offering is based on the targeted business model of the provider, in particular the intended customer and network value.

In addition, business models in themselves are a potential form of innovation. An impediment for service innovation is companies being locked into their own business models. 'These companies are reluctant to take risks with their own business by installing new technology, products, services, or distribution channels' (Edvardsson et al., 2006, p. 169). Innovation cannot take place in the product or service offering and delivery only, it also requires an innovative approach in the way organizations collaborate and share resources and capabilities, leveraging existing information and communication platforms and architectures, and in the way value is created for the customers and firms involved (i.e. the underlying business models). A well-known example of business model innovation is the introduction of direct sales by Dell in the computer industry.

In the next chapter we take a closer look at business models. We start from a specific service and discuss the elements that make up the business models. Services and service design are used as a starting point. From the discussion on (service) innovation, it is also clear that multiple perspectives have to be taken into account (e.g. customer, service provider, technology) and that a number of disciplines (e.g. marketing, management, finance) have to contribute to understanding and supporting service innovation. In our approach, we ask fundamental questions regarding the viability and feasibility of mobile service innovation from various perspectives in a structured way. Moreover, our approach makes it possible to integrate different perspectives and disciplines. In addition, it facilitates communication between the various people and organizations involved and enhances their shared understanding of the business model, offering them the possibility to discuss and play with different scenarios before detailed designing and actually implementing a service.

Our business model approach is intended to offer a contribution to the development of service R&D. We believe that service R&D is fundamental and involves the development of new tools, architectures and methods to support service innovation. In our view, service innovation is directed more at the development of new service ideas into functioning concepts, and basically non-technical in nature. Application of our business model approach will support the latter type of innovation.