E-services: Characteristics, Scope and Conceptual Strengths

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ABSTRACT

The concept of e-services has gained increasing use lately. There is, however, no general agreement as to the precise meaning and scope of the term. The research purpose of the present article is, therefore, to discuss the e-service concept, its strengths and scope, and thereby contribute to the general understanding and definition of the term. Furthermore, the article aims at examining one of the primary conditions for the development of e-services, namely the codification of knowledge in connection with knowledge intensive services. [Article copies are available for purchase from InfoSci-on-Demand.com]

Keywords: Codification, Digital Convergence, E-Services, Interpretation

INTRODUCTION

During especially the past two to three decades, services have increasingly come to the fore in social sciences. Consequently, discussions on the concept of services have erupted time and again - from Hill (1977) to Chesbrough and Spohrer (2006). More recently, after the advent of e-commerce and e-business (e.g. Barua et al., 2001; Kalakota & Whinston, 1996), researchers and academics alike are starting discussing the concept of e-services. However, a clear definition and full understanding of e-services and the e-service concept and paradigm is lacking (e.g. Scupola, 2008). This article, which is conceptual in nature, has the major purpose of contributing to the literature on e-services by characterizing the e-service concept - its strengths and scope - and by examining one of the primary conditions for the development of e-services, namely the codification of knowledge in connection with knowledge

intensive services. The main research question is: How can we characterize the e-service concept and what are the conditions for its further development? The goal of the article is achieved by shedding light on the e-service concept as convergence of services and goods and, in addition, by discussing the conditions relating to the codification of knowledge for the development of e-services. The reason why the knowledge codification issue is important for the development of e-services is that knowledge codification is a requirement for some services, such as knowledge services, to be easily produced and distributed over online networks.

The article is structured as follows. The first section is the introduction, which mainly presents the purpose of the article. The second section provides an overview of the distinguishing features of goods, e-services and services, thus laying the foundation for the understanding of the e-service concept. A literature review of e-service definitions, characteristics and e-service research approaches are then provided in the third section. The following section discusses then knowledge codification and its importance for e-service development. Finally the concluding section provides concluding remarks and challenges for further research.

E-SERVICES AS CONVERGENCE OF SERVICES AND GOODS

In contrast to goods, which can be separated from the immediate producers and sold on an anonymous market, services are delivered by their immediate producers and are not anonymous (Henten, 1994). Consumers will know who the immediate producers are (or will at least have the possibility to do so). It is often said that services are produced and consumed simultaneously and, therefore, require face-to-face contact between the producers and the consumers in the production/ consumption phase (Rust, 2001; Hill, 1977). This may not always hold entirely true, but the consumption will at least start right after the end of production – as in the case of repair work. The basic definition of services has nothing inherently to do with whether it is material or immaterial. The repair work of a plumber, for instance, is material in nature, but is a service. Indeed, information and communication technologies (ICTs) affect all kinds of goods and services with respect to their transaction on the market (e-business) (e.g. Penttinen et al., 2008). However, in the case of data, information and knowledge services (informational services), it is the product itself which is affected (e.g. Gullkvist, 2008). With ICTs, it is possible to enter data, information and knowledge (to the extent it can be codified) on digital media and use communication networks for transportation (e.g. Ahonen et al., 2008). This means that data, information or knowledge services increasingly can be separated from the immediate producers and sold on anonymous markets. They become goods in a sense. Formerly, paper was the primary physical media for turning informational services into goods. Presently, electronic media increasingly dominate (e.g. Ihlström Eriksson et al., 2008).

At the same time, for some categories of goods, producers seek to customize their products to meet the individual demands of customers (Sundbo, 1997). One of the most heralded examples is Dell and their use of Internet to receive information from customers regarding their specific

computer configuration choices (Dell, 2000). Furthermore, a wide variety of services surrounding the goods, e.g. after sales services and information services, are developed in order to provide a better customer experience and a more personalized/customized environment (e.g. Pine and Gilmore, 1999). Nevertheless, most goods will remain mass-produced and maintain their anonymous character.

Software is increasingly sold as a service via electronic networks (Tiwana and Balasubramaniam, 2001). This applies to custom-made software solutions for business enterprises and it applies to mass-produced software transferred on networks. In the case of custom-made software, we are already dealing with a service according to the above definition of services. In the case of mass-produced software, we are concerned with a good. In both cases, however, the new feature is that the ownership rights of the software are not transferred to the user and the operation of the software will be likely to be executed on the computers of the organisation delivering the software service. Therefore software, which has hitherto been sold as goods to end-users, is increasingly sold as services. To the extent that this develops, it could be claimed that there is a degree of convergence of goods and services enabled by the use of digital communications. As always, there is no sharp and unequivocal dividing line between goods and services. The most important thing in the context of the present article, though, is the trend regarding informational services to acquire elements of the basic characteristics of goods concerning separation from the immediate producers and anonymity. It is this convergence of goods and services when transmitted over online networks that we call e-services as the e-service concept is

helpful in conceptualizing these developments (see the following section for definitions and characteristics of e-services).

In a seminal paper by Hofacker et al. (2007) a similar understanding of the e-service term is developed. E-services are situated between services and goods (Table 1). E-services have characteristics in common with services as well as with goods. The authors of the present article do not necessarily agree with all specific characterizations of all three product areas illustrated in Table 1. However, the authors agree that the main idea and thrust in the characterizations illustrate very well the e-service concept.

For a concept to gain and maintain scientific value, it must refer to features, relationships or developments in a manner, which differentiates it from and adds something to other and already well-established concepts. As discussed above and based on previous work, especially the work by Hofacker et al. (2007) we think the e-service concept denotes and connotes such features and developments. Its primary scientific value relates to the ongoing convergence of services and goods facilitated by digital communications. Services, which hitherto depended on face-to-face encounters, can increasingly be digitized and delivered on communication networks whereby the connection between the immediate producer and the service is changed turning the service into a good-like product. Conversely, some goods such as software (Tiwana and Balasubramaniam, 2001) and printing services (e.g. Penttinen et al. 2008; WhatIs.com) which formerly were sold to the customers as goods are increasingly delivered as service to customers. In both cases we talk about e-services. The core strength of the e-service concept lies therefore in the conceptualization of this convergence of

Table 1. Distinguishing features of goods, e-services and services

Goods	E-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
Can't be copied	Can be copied	Can't be copied
Can be shared	Can be shared	Can't be shared
Use equals consumption	Use does not equal consumption	Use equals consumption
Based on atoms	Based on bits	Based on atoms

Source: Charles F. Hofacker et al. (2007): E-services: A synthesis and research agenda, Journal of Value Chain Management 1(1/2).

informational services and goods. Defined this way codification becomes essential to e-services development and diffusion.

E-SERVICES: DEFINITIONS, CHARACTERISTICS AND THEORETICAL APPROACHES

Having discussed the primary strengths of the e-service concept as lying in e-services being conceptualized at the convergence of informational services and goods, we now turn to the more formal definitional exercise and to the characteristics and the provenance of the term in some of the many contributions that have been made during the past ten years.

E-services have been defined in the literature as a new phenomenon at the border between two main domains of studies: marketing and e-commerce/e-business (Hoffman, 2003; Hofacker et al. 2007). As such this new concept attracts the attention of researchers and business people alike and creates a number of research challenges especially in terms of definitions, characteristics and theoretical foundations. This section aims to address some of these challenges.

E-Service Definitions

There are many definitions of e-services. Some focus on the delivery and delivery infrastructure (digital networks) while others emphasize both the delivery process and the benefits or outcome of the service (Hofacker et al. 2007). However, what is in common to all these definitions is that e-services are characterized by the electronic delivery of the service.

One of the first definitions of e-services was provided by Tiwana and Balasubramaniam in 2001. In this article, Tiwana and Balasubramaniam define e-services in the following manner:

We view e-services as Internet-based applications that fulfil service needs by seamlessly bringing together distributed, specialized resources to enable complex, (often real-time) transactions. Examples of e-services include supply chain management, customer relationship management, accounting, order processing, resource management, and other services that are electronically delivered through the Internet.

Their paper is about software and the trends towards selling software as a service (SaaS). Service in the SaaS concept means that software vendors develop software applications and host and operate the applications for the users. Users do not pay for owning the software, but for using it. The 2001 definition of Tiwana and Balasubramaniam thus emphasizes one of the two main strengths of the e-service concept, namely the trend towards delivering software functions as a service.

However, the general use of the term e-service is closer to the e-service concept developed by Hewlett-Packard. As in the case of the e-business concept, which was first coined by IBM, the term e-service was also originally developed by an IT-company, Hewlett-Packard. According to WhatIs.com:

E-services, a business concept developed by Hewlett Packard (HP), is the idea that the World Wide Web is moving beyond e-business and e-commerce (that is, completing sales on the Web) into a new phase where many business services can be provided for a business or consumer using the Web. Some e-services, such as remote bulk printing, may be done at a Web site; other e-services, such as news updates to subscribers, may be sent to your computer.

Other e-services will be done in the background without the customer's immediate knowledge. (WhatIs.com)

This conception of e-services is wider than SaaS. It encompasses informational services offered to the end-users (e.g. news updates) in addition to the services 'done in the background without the customer's immediate knowledge', i.e. back-office operations (see e.g. Janssen, 2008). It includes all services delivered digitally and it applies whether the services are delivered to end-users (Business-to-Consumer (B2C)) or to business users (Business-to-Business (B2B)). In a paper written by Piccinelli & Stammers (2001) working for Hewlett-Packard, an e-service is defined as

... any asset that is made available via the Internet to drive revenue streams or create new efficiencies (Piccinelli & Stammers, 2001).

This definition is sufficiently broad and, at the same time, narrow, in the sense that it excludes services that cannot be delivered via the Internet. This means that the services, which are marketed and sold on the net but cannot be delivered (i.e. transported) on the net, are excluded from the e-service concept. It must be services that can be entered on digital media and, therefore, transported on digital networks in order to be included in the e-service concept.

This does not exclude services delivered as support to services which cannot themselves be digitally delivered. This applies, for instance, to travel agencies, which sell travel services but do not deliver the travel or accommodation service themselves. This kind of service is, for example,

used as examples of e-services by Iqbal, Verma, and Baran (2003).

While most definitions of e-services mainly focus on the delivery part (via digital networks), other researchers also stress the production of the e-service in addition to the delivery part of the service. For example Scupola (2008) states that:

E-services are defined as services that are produced, provided and/or consumed through the use of ICT-networks such as Internet-based systems and mobile solutions (Scupola, 2008).

Furthermore, some definitions also emphasize the outcome and the benefits of e-services in addition to the delivery mode and delivery infrastructure of e-services. This has been noted, for example, by Hofacker et al. (2007). By following this line of thought, we develop a classification of e-services according to the delivery and infrastructure view and the production, delivery and outcome view in Table 2.

Characteristics of E-Services

Having presented definitions of e-services in the previous session, we will discuss e-service characteristics as summarized in Table 3 in the following. For this purpose, we use a classification developed by Hofacker et al. (2007), who identify three prototypes of e-service:

1. E-services as complements to existing offline services and goods. Examples can be online seat reservations offered by airlines and travel agencies (e.g. Hofacker et al., 2007).
2. E-services as substitutes for existing offline services. Examples can be e-newspapers (e.g. Ihlstrom Eriksson et

Table 2. A summary of e-services definitions

Delivery and infrastructure view	Production, delivery and outcome view
Those services that can be delivered electronically (Javalgi, Martin and Todd, 2004)	Any asset that is made available via the Internet to drive revenue streams or create new efficiencies (Piccinelli and Stammers, 2001)
Provision of services over electronic networks (Rust, 2001; Rust and Kannan, 2003)	An act or performance that creates and provides benefits for customers through a process that is stored as an algorithm and typically implemented by networked software (Hofacker et al., 2007)
Interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technologies (Boyer, Hallowell and Roth, 2002)	E-services as Internet-based applications that fulfill service needs by seamlessly bringing together distributed, specialized resources to enable complex (often real-time) transactions (Tiwana and Balasubramaniam, 2001)
E-service is deeds, efforts or performance whose delivery is mediated by information technology (including Web, information kiosks and mobile devices). Such e-service includes the service element of e-tailing, customer support and service, and service delivery (Rowley, 2006)	E-services are defined as services that are produced, provided and/or consumed through the use of ICT-networks such as Internet-based systems and mobile solutions (Scupola, 2008)

Table 3. A summary of e-service characteristics

Types of e-services	B-to-B	B-to-C	G-to-B and G-to-C	C-to-C
Characteristics/ focus	Collaboration and relationship building	Selling to and retaining the customer	User/citizen empowerment, e-democracy, city/ rural areas divide	Peer-to-peer value creation
Examples	Supply chain management in outsourced printing services and facilities, SaaS	E-retailing, e-customer relationship management, e-banking, e-newspapers, Web portals	Online tax returns, e-voting, e-libraries, tele-medicine, remote social security services	Online auctions, consumer driven e-marketplaces, online gaming, online communities (newsgroups). wikis

al., 2008) or online auctions such as e-bay (e.g. Wang et al., 2008).

3. Uniquely new core e-services. Examples can be online computer games, or search engines as for example Google (e.g. Vragov, 2009).

In addition, according to Scupola (2008), there are three main characteristics of e-services:

•   The service is accessible via the Internet or other electronic networks.
•   The service is consumed either directly or indirectly via the Internet or other electronic networks.
•   There might be a fee that the consumer pays the provider for using the e-service (e.g. a surcharge for buying a movie ticket online), but that might not always be the case as is exemplified by some e-services offered by the government.

Much of the theoretical literature on e-services is found within the service and service marketing field and focuses mainly on e-services that are substitutes or complements to offline goods or services. This stream of literature takes mainly a commercial approach to investigating e-services (e.g. Hofacker et al., 2007). However, there

are many studies investigating e-services that do not have an immediate commercial return, but are offered for example by government agencies or are e-services provided and co-produced by users such as wikis (e.g. Gogia, 2008). Therefore, if we take a broader approach to e-services than just service marketing and e-commerce, we can distinguish the following 4 main groups of e-services:

•   Business-to-business (B-to-B): these play an important role in the trend towards supply chain integration and coordination (Iyer et al., 2004) as for example in the case of outsourced printing services and facilities (e.g. Penttinen et al., 2008). B2B suppliers often create more powerful electronic fulfilment mechanisms than do B2C retailers. In addition, they might function also in the back stage (e.g. Janssen, 2009).
•   Business-to-consumer (B-to-C): these are mostly commercial e-services as for example e-banking (e.g. Toufaily et al. 2009), e-newspapers (e.g. Ihlstrøm et al., 2008) and some types of portals (e.g. Pejic-Bach and Pejic-Bach, 2008).
•   Government to business (G-to-B) or to consumer (G-to-C) : these e-services

are not commercial in nature and examples can be social security services provided online to remote areas (e.g. Rubeck and Miller, 2008), telemedicine (e.g. Gogia, 2008) or e-libraries (e.g. Scupola and Nicolajsen, 2009).

- Consumer-to-consumer (C-to-C): this includes most of the literature on virtual worlds and online communities as for example wikis and online dating (e.g. Krishnan et al., 2003).

Theoretical Approaches to E-Services

While the emerging e-service concept has its roots in the service marketing and e-commerce literature (e.g. Hofacker et al., 2007; Hoffmann, 2003), e-services are being studied from different empirical and theoretical perspectives among which innovation and innovation diffusion literature, management and strategy literature as well as e-government literature. For example, at the border between e-services as defined in this article and innovation and diffusion theory, a number of studies have addressed adoption and diffusion of business to consumer e-services (e.g. Toufaily et al., 2009), e-services business models (e.g. Ihlstrom et al. 2008), user-driven innovation in e-services (Scupola and Nicolajsen, 2009), business-to-business e-services innovations and transformations (e.g. Legner, 2008; Cooper et al., 2009; Janssen, 2009), and e-government (e.g. Lawson-Body, 2008).

Furthermore, Gurao (2008) divides the marketing literature focusing on e-services into two major streams: one investigating consumer readiness and one addressing e-service quality. According to Gurao (2008), consumer readiness in e-services focuses on three main elements: role clarity, motivation

and ability. Regarding e-service quality, different studies have found different variables which include ease of use, aesthetic design, security, intangibility, reliability, availability. Table 4 presents selected studies of e-services.

E-SERVICES CHALLENGES

As our literature review reveals there are many definitions and descriptions of e-services. Each definition and description has implications for theorizing and empirically investigating e-services. However, when we define the e-service concept as the convergence of some types of services (e.g. knowledge services) and goods, codification of the production or the content of the service becomes essential. This can be reached either by codifying the service content or by developing ICT-based tools through which knowledge is embedded and thus provided to the customer. This section addresses the second part of the research question and attempts at understanding the degree to which the knowledge embedded in the service provision can be codified, entered on ICT, and sold on markets as informational goods or e-services. This is important because there are different types of services and e-services. Some can be characterized as homogenous, inventoried and with separable consumption. Others, which are more personalised, require personal involvement at each end. Here the service provided can neither be inventoried, nor is it homogenous, and it cannot be copied as it involves social relations.

Table 4. Theoretical approaches to investigating e-services- selected readings

Innovation and innovation diffusion	Management and strategy	Marketing	
		Consumer readiness	E-service quality
Black et al. (2001)	Boyer et al. (2002)	Schneider and Bowen (1995)	Parasuraman et al (2005)
Toufaily et al. (2009)	Pejic-Back and Pejic-Bach (2008)	Meuter et al. (2005)	Gournais and Dimitriadis (2003)
Scupola and Nicolajsen (2009)	Gullkvist (2008)	Bobbitt and Dabhholkar (2001)	Bauer (2006)
Walker et al. (2002)			Collier and Bienstock (2006)
Gerrard and Cunningham (2003)			Jun and Cai (2001)
			Zeithaml et al. (2003)

Codification of Knowledge

Codification is not always an easy task especially if complex knowledge, building on experience, is involved (Nonaka, 1994). In the second session of this article, the concept of 'data, information and knowledge' was used. However, there is an important difference between data, information and knowledge. While the data concept denotes the simple elements, information denotes a more complex structure of data elements put into context, whereas knowledge constitutes an even more complex phenomenon, namely an understanding of relationships between different data elements, i.e. a conceptual framework including norms (Davenport and Pruzak, 1998). A persuasive conceptualization of 'data, information and knowledge' is that knowledge is a tool used to turn data into information, meaning that knowledge is used as a framework for putting data into context transforming it into information (Valentin and Hansen, 2004). This discussion resembles the distinction between knowledge as product and

knowledge as process (e.g. see Newell et al., 2002 or Cook and Brown, 1999). Cook and Brown (1999) argue that knowledge as a product needs to be recreated (reprocessed) in order to become valuable in a new context (knowledge as process). This recreation process can be more or less complicated and feasible depending on 1) the knowledge to be exchanged as well as 2) the actors involved and their capabilities in communicating and understanding the knowledge. There is thus a process of codifying knowledge as well as one of decoding or reinterpretation.

Following the above understanding, the question is to what extent it is possible to codify knowledge and use it in the production of informational services for digital distribution or e-services? The question raised is the degree to which the knowledge embedded in the service provision can be codified, entered on ICT, and sold on markets as informational goods.

In discussions on the codifiability of knowledge, the issue of tacitness is often invoked (Polanyi, 1958; Cowan, David and

Foray, 2000, Nonaka, 1994). The question of codifiability concerns the degree to which tacit knowledge can be turned into explicit or codified knowledge. Limitations on the codification of knowledge are often related to lack of language and implicit and complex relations without clear cause and effect. This is further explained by Blackler (1995) as he lists five different images or sources of knowledge. He argues that codified knowledge is a special and incomplete type of one of the four other types of knowledge: embodied, embedded, embrained or encultured knowledge. The knowledge we use when providing a service is most often personal as well as social. Our bodily, cognitive and emotional personal competences and the greater systems, norms and structures that we are part of are involved.

According to Newell et al. (2002) a number of reasons can be given as to why it may not be worthwhile or possible to codify knowledge. First of all, it can be too *difficult to explain*, it can be *imprecise* or difficult to *verify,* or it can be too *time consuming* because of changes in conditions and the knowledge needed. Newell et al. (2002) also argue that there may be *political issues* involved, making codification sensitive. In the service provision this could be related for example to revealing inherent norms or differences in the treatment of customers. There can also be too big a need for variations, like customizing the service to the receiver (reducing the possibility of standardization).

Difficulties in codification are often related to differences in competences, knowledge and understanding between the sender and receiver which in our case equal the service provider and the service customer. Markus (2001) has examined such challenges arguing that the knowledge base

and especially the differences in knowledge base are highly important and affect the possibility of knowledge transfer and also how much is needed to be codified to make sense. When two communicating persons have the same background and experiences it may be easier for them to communicate and exchange knowledge (Markus, 2001). However, if an expert communicates with a less experienced receiver it is necessary to consider the knowledge base of the newcomer to judge what he needs to know to get a valuable service. This includes considerations on how much detail and explanations is needed to make the receiver understand what is conveyed.

Even in services with a great amount of codified knowledge, it is not certain that this service can be fully sold digitally or as a stand-alone e-service. All the knowledge that can be codified and put on a piece of paper, can be entered on digital media. However, this does not mean that it can be sold as an all-digitized service or e-service. Legal services, for instance, are based on laws and other legal documents that can easily be put in digital form, but need the right competences for interpretation. Another example is the buying and selling of real estate. All legal documents and other kinds of information related to the buying and selling of real estate can be codified and digitized. However, real estate agents still make money on the intermediation of these processes. A major reason is that buyers and sellers of real estate do not have sufficient confidence in their own handling of these affairs. They want an intermediary with experience regarding decoding/interpretation in these matters (Hagedorn-Rasmussen, 2006).

This issue is closely related to the process of interpretation. Customers need an interpretation of the facts and documents.

Such interpretations can, of course, be written down. However, an overview of the different kinds of interpretations requires experience, which is what service providers offer. This is even more apparent if dealing with people from different countries or cultures (knowledge as encultured). The implication is that the production and marketing of knowledge and knowledge services is limited to contexts in which there is a match of interpretation. International engineering consultancy services in the house building market provide a good example: local offices of engineering consultancy companies are often essential, as the requirements and environments are different from country to country (Henten, 2005).

We can then conclude that many core knowledge-intensive services might not easily lend themselves to become e-services. This applies for example to services that are not easily codified because the knowledge is too complex, too situational or dependent on experiences or trust, issues that delimit the codification needed in what we understand as the core of e-services in this article.

In addition to these core e-services, there are a number of services, which are delivered via digital networks, but which are not totally codified. This is illustrated in Figure 1, which differentiates between 'codified e-services' and 'other e-services'. Codified e-services include informational services, which are codified and delivered on digital networks, as well as software functionalities delivered as services. Other e-services are the non- or not entirely codifieble services delivered on digital networks.

CONCLUSION

The purpose of this article has been to add to the literature on e-services by discussing the e-service concept - its strengths and scope - and importance of knowledge codification for further development of e-services. As already said, for a concept to gain and maintain scientific value, it must refer to features, relationships or developments in a manner, which differentiates it from and adds something to other already well-established concepts. In this article we have discussed different interpretations of the e-service concept and we have related e-services to services and goods. The conclusion is that the e-service concept denotes and connotes such features and developments.

Figure 1. Codified and other e-services
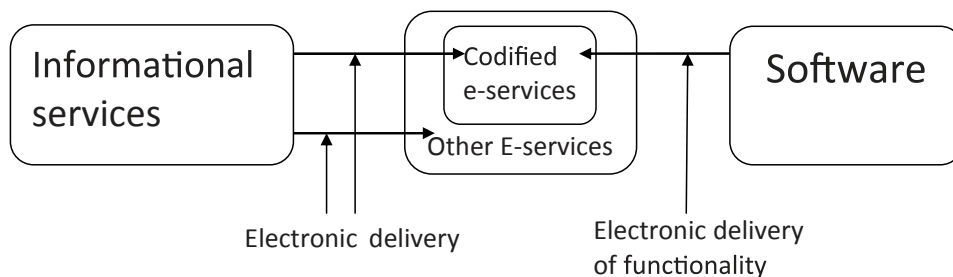
Specifically, its primary scientific value relates to the ongoing convergence of services and goods facilitated by digital communications. Services, which hitherto depended on face-to-face encounters, can increasingly be digitized and delivered on communication networks whereby the connection between the immediate producer and the service is changed turning the service into good-like product. Conversely, some other products that formerly were sold to the customers as goods are increasingly delivered as services to customers. The e-service concept thus encompasses all informational services (data, information and knowledge) and software delivered on digital networks.

This understanding of the e-service concept gives emphasis to standardized and modularized services. However, there are also e-services, which are less standardized. This applies, for instance, to consultation services, which are delivered via communication networks, but consist of non-standardized interpersonal communications between service providers and service users (e.g. Gogia, 2008; Rubeck and Miller, 2008).

With respect to the conditions for the development and growth of e-services, the paper points at the codifiability and interpretation of the knowledge embedded in the service provision as crucial aspects, thus emphasizing the delivery of standardized services, including software as a service, via digital networks.

We suggest that future work on e-services must centre on the conditions for turning traditional informational services into e-services including the drivers and barriers for the codification and decodification of knowledge. Also, the drivers and barriers for software functionalities to be sold as a service need to be further examined. For software functionalities to be sold as e-services, the major challenges are related to changing business models and to the market acceptance of new ways of acquiring the utilities of software.

The article suggests a number of themes related to the e-service concept which are necessary to take into consideration in scientific analyses of e-service developments. These themes need further elaboration. It could, for example, be interesting to deepen the discussion on service and goods characteristics in order to better explain and understand the concept of e-services. Nevertheless, we believe that the article has made a contribution to understanding the e-service concept, which might be of interest to researchers and managers alike.

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