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Identifying Neo-Schumpeterian Innovation in Service Firms: A Conceptual Essay with a Novel Classification

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IDENTIFYING NEO-SCHUMPETERIAN INNOVATION IN SERVICE FIRMS: A CONCEPTUAL ESSAY WITH A NOVEL CLASSIFICATION

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The identification of innovation in service firms is problematic since there is no consensus of opinion on its conceptualization. Recent papers suggest both distinctive features of innovation in services and distinctive types of service innovation. This article reviews and evaluates these findings from a Schumpeterian perspective. The evaluation justifies conceptualizing service innovation as a specific case of service development with a reference to Schumpeter, but not as strict as proposed by Drejer (2004) [Drejer, I. (2004) Identifying Innovation in Surveys of Services: A Schumpeterian Perspective. *Research Policy*, **33**, 551–562]. Despite the simultaneity of production and consumption in services, this article claims that the distinction between product innovation and process innovation should be preferred to other ways of classifying innovation in service firms. Finally, changes in the denomination of services are advanced as a key to the identification of development and innovation in service firms.

Keywords: Services; Innovation; Technology; Schumpeter

JEL classification: O31

1 INTRODUCTION

Since the 1980s, the attention paid to innovation in services and new service development (NSD) has increased enormously. This is accounted for by the rise of the service sector, increasing use of ICT and the increasing quality awareness (Miles, 2004). For several reasons, however, theory building is still in its infancy. Service characteristics make the main reason. The heterogeneity of customer requests, the co-producing customer, simultaneity of service production and consumption, and the intangibility of the service output are characteristics we are still not able to cope with in service innovation studies. Moreover, our understanding of the factors making a service experience is limited (Storey and Easingwood, 1998; Fitzsimmons and Fitzsimmons, 2000). Together, this hinders the identification, classification and appropriation (Dolfsma, 2004) of novelty and change in services. In addition, classifying novelty in services as *innovation* is hindered by the fact that innovation constructs have been designed initially for industry purposes, since services were considered as inherently unproductive (Kox, 2002; Toivonen, 2004).

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The identification, classification and appropriation problem is most manifest in firms earning their income predominantly from partly customized and bespoke services, i.e. particularized services (Tether *et al.*, 2001). Knowledge intensive business services (KIBS) are a case in point. KIBS, offering expertise as business (Toivonen, 2004), interact intensively with their customers, at multiple moments and frequently on the customer spot (Miles *et al.*, 1995; Silvestro, 1999; Sivula *et al.*, 2001; Bettencourt *et al.*, 2002; Miles, 2005; Leiponen, 2006). They might be expected to be very innovative, since KIBS are concentrations of highly educated employees with various backgrounds.

KIBS have to cope with a heterogeneous customer population, since they are requested to act predominantly as suppliers of innovation services (Beije, 2000; Toivonen, 2004), i.e. as co-producers of innovation and change (Den Hertog, 2000; Muller and Zenker, 2001; Strambach, 2001). In at least two studies, the adaptation of a knowledge intensive service provider to heterogeneous customer requests is classified as innovation. Reuse of the emerging knowledge and service practices in future assignments is advanced to justify the link between innovation and everyday business. Gallouj and Weinstein (1997) classified the adaptation to heterogeneity accompanied with new business spin-offs as '*ad-hoc* innovation' and, more recently, Flikkema *et al.* (2003) denominated it as 'emerging innovation'. Sundbo (2000) and Van Poucke (2005) emphasize the continuous innovation mode of KIBS while referring to the heterogeneity of customer requests.

We cast doubts on the continuous innovation mode of KIBS and disagree, from a Schumpeterian perspective, with classifying customization as innovation in the earlier mentioned cases. We argue that it makes sense to conceptualize service innovation as a specific case of service development, i.e. as technological innovation in service firms, while taking into account that many service firms do not excel in the production of technologically advanced artefacts, but foremost in the creative use of new technologies.

In this conceptual essay, which originates from the research workshop 'Management of innovation – Are we looking at the right things?' Vedbaek (DK) June 2004, we explore service development in order to understand service innovation. Not just in KIBS, though the identification problem seems most manifest there, but in the service sector as a whole. We take a Schumpeterian perspective, since we agree with Drejer (2004) that the economic impact factor should get a much-needed attention in service innovation studies (see also Zagler, 2002). However, we also agree with Tether (2005) that an approach inspired by Schumpeter should be preferred to taking a strict Schumpeterian approach, if possible anyhow. Schumpeter's definitions were not precise, and much has changed in the 50 years since Schumpeter's death (Tether, 2005). Therefore, we denominate our conceptualization of service innovation 'neo-Schumpeterian'.

Service development is considered from a supplier perspective and conceptualized as 'a change of the employed resources, competences or capabilities, supposed to enable the realization of a firm's transformational intentions'. The development of services at the firm level is not necessarily a consequence of deliberate and budgeted development initiatives in the technology domain and not necessarily driven by economic motives. In various cases, it is, for example, a consequence of the heterogeneity of customer requests or a consequence of institutional change. Service innovation is considered as a subset of service development. Therefore, exploring service development in order to understand service innovation should be understood as an outside-in or dual approach to understanding service innovation. In addition, this article has to be considered as an attempt to classify the variety of offers announced by service firms as new services, new 'service products' and new products in a legitimate way.

This article is divided into five sections. Section 1 describes and discusses the aspects and approaches of service innovation and innovation in services. It contains a review of innovation

research in the service industry. The review clarifies that some of the service-specific innovation concepts, which emerged in the last decade, strain the Schumpeterian innovation opinion, whereas others can be regarded as a refinement of Schumpeter's 1934 innovation forms. Section 2 ends with a plea for an extended technology approach to service innovation.

Section 3 proceeds with the service development notion. We discuss the widely used transformation view on service delivery, conceptualize service development from a supplier perspective and introduce a service development framework using the STEEPV (social, technological, economic, environmental, political, values-ethical) driving forces of change. Service innovation is considered as a specific case of service development and five criteria are used to specify it accordingly. Four of the 'specific case criteria' refer directly to Schumpeter. The fifth criterion reflects a proposal for a firm-level approach to innovation in services. Examples found in Benelux trademark data are used to illustrate the proposed conceptualization of service innovation. Finally, despite the simultaneity of production and consumption in services, we argue that the distinction between product innovation and process innovation should be preferred to other ways of classifying innovation in service firms.

In section 4, changes in the denomination and branding of services are advanced as a key to the identification of service development and service innovation. The article ends with conclusions and consequences for policy making.

2 APPROACHES AND ASPECTS OF SERVICE INNOVATION

As a consequence of the service peculiarities, three approaches have been employed to describe, analyze and explain innovation in services (Coombs and Miles, 2000). In *assimilation approach*, innovation in services is seen as fundamentally similar to innovation in manufacturing, i.e. as the production and use of technologically advanced artefacts (Tether, 2005), and it should therefore be studied using methods and constructs for manufacturing. According to *demarcation approach*, innovation in services is considered to deviate substantially from innovation in manufacturing, and new theories, instruments and indicators have to be designed in order to understand innovation in services dynamics. *Synthesis approach* recognizes that studies on innovation in services have thrown light on neglected aspects of innovation processes in general, highlighting the different types of innovation.

Studies supporting the assimilation approach predominantly focus on technological change. Scientists supporting the demarcation or synthesis approach emphasize the relevance of non-technological aspects of innovation (NTAI) as well. In this section, we pay attention to both technological and non-technological aspects and end with a synthesis.

2.1 Technological Innovation

The primary source of reference for most 'assimilative' contributions to understanding the innovation patterns and technological change in the service sector is the well-known taxonomy of technological change developed by Pavitt (1984). Pavitt (1984) examined (1) the institutional sources of the main knowledge inputs into innovations, (2) the main motivation behind the technological trajectories, (3) means of appropriating benefits, (4) the importance of product and process innovation, (5) the relative size of innovating firms in different industries and (6) the intensity and direction of technological diversification. Variation in industry-level tendencies led Pavitt to characterize three sectoral patterns of technological change: (1) supplier-dominated, (2) production intensive and (3) science based. Pavitt's taxonomy deals mainly with manufacturing. Service industries are considered as 'supplier dominated', i.e. as

consumers of new technology. Supplier-dominated firms make only a minor contribution to their process or product technology. Most new technology comes from suppliers of equipment, materials, software and other inputs.

Barras (1986, 1990) was the first one to discuss the asserted supplier domination in the service sector. He introduced the 'reverse product cycle' (RPC), a three-stage model of innovation processes in service industries. The model proposes a dynamic process of innovation in sectors adopting a new technology, which is the reverse of the process commonly identified as prevailing in those sectors that produce the capital goods embodying the new technology (Barras, 1990). The RPC shows increases in efficiency in its first stage, improvements in service quality in the second stage and ends with the generation of new service products. Though the dominance is on the supplier-side during the first stage, this shifts to the user in the second stage. According to Barras (1990), the third stage of the RPC can even be described as being 'user dominated' rather than 'supplier dominated'. 'Firms in the adopting industry become more active in pursuing the R&D function so as to expand technological possibilities for themselves' (Barras, 1990, p. 226). Barras proceeds with 'such activities are either pursued by specific departments within the major firms in the industry, or alternatively by subcontracting to small specialist consultancies which grow up to service these major firms'.

User domination seems to refer to Schmookler's 1962 demand-pull theory at first sight. Schmookler (1962) found an evidence in the railroad, petroleum refining and building industry that the output of a commodity and invention relating to it vary together, with invention tending to lag. On the basis of this evidence, Schmookler argued that inventive effort is responsive to economic pressures and opportunities. According to Schmookler (1962), scientific discoveries are sometimes necessary, but seldom sufficient conditions for invention. Upswings in inventive activity seem to respond primarily to upswings in demand. Empirical evidence from the service sector subscribing to the demand-pull theory is not reported yet. Service classification problems and the finding of Andersen and Howells (2000) that Intellectual Property Rights shape innovation dynamics within services only to a limited extent, causing a lack of data, seem to explain this lacuna in the innovation literature.

The active role of users in innovation processes has been addressed as well by Lundvall (1992) and, in particular, by Von Hippel (1988, 2005). Lundvall (1992) emphasizes that the introduction of modern technology and its later use very often include modifications, and therefore an element of reinvention. Reinvention is also addressed by Winter (1984), who argues that the assimilation of novelty requires complementary problem-solving effort. Von Hippel (2005), who identifies important aspects of technological innovation that run contrary to the thrust of conventional scholarship, argues that innovation democratizes. This means that users of products and services are increasingly able to innovate for themselves, which implies a shift from manufacturer-centric innovation to user-centered innovation processes.

Inspired by the work of Barras, Pavitt *et al.* (1989) modified the '1984 taxonomy'. They introduced a new category called 'information-intensive firms', covering industries such as the financial sector or retailing, and they identified other service industries (e.g. software) as 'specialized technology suppliers'. This modification has been thoroughly revised by Soete and Miozzo (1989), who elaborated a 3-fold taxonomy on innovation in services. Beside the supplier dominated service firms and the specialized technology suppliers, they elaborated the category 'network-based industries', which covers two subgroups – namely, 'scale-intensive industries based on physical networks' (e.g. transport) and 'industries relying on information networks' (like in financial services). The latter draw heavily on information technologies (IT). More recently, Evangelista (2000) has introduced an alternative taxonomy with four sectoral patterns of technological change in services. In particular, the 'interactive and IT based' pattern

deviates strongly from Pavitt's original taxonomy. The former pattern reflects the importance of interaction between the service provider and final users and the widespread use of IT in some service sectors.

Most of the taxonomies mentioned thus far are based on the industry-level analysis (Pavitt, 1984; Pavitt *et al.*, 1989; Soete and Miozzo, 1989; Evangelista, 2000), predominantly carried out at the two-digit industry level (Leiponen and Drejer, 2005). It is, therefore, assumed that innovation patterns below this level of aggregation are homogenous. Hollenstein (2003) has tested the homogeneity assumption using data from the Swiss service sector. On the basis of firm-level data, he shows a clear and positive correspondence between service industries and innovation modes. At the same time, he also shows a wide distribution of the innovation modes over the service industries. The intra-industry heterogeneity is also found by Leiponen and Drejer (2005), studying the patterns of innovation within and across industries using firm-level data from Finland and Denmark. Approximately half of the industries observed at the four- and five-digit level had no dominating technological regime. Although service industries are considerably more poorly represented in their data material, they do not find any indications that these industries are different from manufacturing industries in terms of heterogeneous behavior in relation to innovation (Leiponen and Drejer, 2005, p. 23). The homogeneity assumption seems therefore to be untenable.

2.2 Non-technological Innovation

Beside the homogeneity assumption, Hollenstein (2003) addresses the dominant focus on technological change in the industry-level analyses. This focus diminishes the scope of Schumpeter's pioneering analyses (Gallouj and Weinstein, 1997). The need of adopting a broad, not strictly technological, view on innovation in services is suggested by several researchers (Den Hertog *et al.*, 1997; Gallouj and Weinstein, 1997; Sundbo, 1997; Gallouj, 2000; Gallouj and Gallouj, 2000; Hamel, 2000; Sundbo and Gallouj, 2000; Den Hertog *et al.*, 2004). Hamel (2000), for example, argues that business concept innovation, which is both radical and systemic and therefore closely related to Schumpeter, will be the defining competitive advantage in the next decade. 'To turn information technology into a secret weapon, you have to be able to conceive of hip, new business models – a skill possessed by few Chief Information Officers' (Hamel, 2000, p. 17). Winter (1984), however, doubts the meaning of conceptualizing non-technological innovation (NTI). Proposing an evolutionary view on economic change, Winter (1984, p. 291) considers innovation as a deliberate change in firm routines resulting from search processes. 'Routines govern choices as well as describe methods, and reflect the facts of management practice and organizational sociology as well as technology'. Therefore, according to Winter (1984), technological innovation and organizational innovation should be placed on the same conceptual footing since they are expected to be intermingled in any real innovation event.

According to the Oslo Manual (OECD-EUROSTAT, 1997, p. 88), 'non-technological innovation covers all innovation activities of firms which do not relate to the introduction of a technologically new or substantially changed good or service or to the use of a technologically new or substantially changed process'. Since it is not clear how 'innovation activities' and 'technologically new' are to be interpreted according to the Oslo Manual, NTI is a fuzzy concept.

Sundbo and Gallouj (2000) argue that innovation in services can be described as a loosely coupled system, with both technological and non-technological 'trajectories' in the Dosian sense (Dosi, 1982). We cast doubt, however, on the meaning of the seven service innovation

patterns proposed by Sundbo and Gallouj (2000). These patterns seem to be a mix of:

- innovation patterns: in particular, the industrial pattern, the neo-industrial pattern and the entrepreneurial pattern;
- the way services develop over time: in particular, the service professional pattern and the artisanal pattern;
- the way innovation is organized: in particular, the organized strategic innovation pattern and the network pattern.

Den Hertog *et al.* (2004) propose a distinction between NTA and NTIs. With respect to the NTA, they emphasize that innovative success requires innovative organizations and various types of non-technological competencies. The NTA are described in terms of 'competencies' and 'organizational characteristics' instead of 'activities' as in the Oslo Manual. The NTI research review of Den Hertog *et al.* (2004) is illustrative for the over-stretch of the Schumpeterian innovation notion in service innovation research reported by Drejer (2004). The six types of innovation proposed by Gallouj and Weinstein (1997) pass in the NTI review first. Gallouj and Weinstein try to lay the foundations for an integrative innovation theory, using Lancaster's 1966 definition of the product as a set of service characteristics. They differentiate between six types of innovation: radical, improvement, incremental, *ad-hoc*, recombinative and formalization innovation. Drejer (2004) shows that *ad-hoc* and formalization innovation have no Schumpeterian meaning. In both cases, activities – learning and codification – that might lead to innovation are mingled with actual innovation. Radical, improvement, incremental and recombinative innovation can be regarded as refinements of the Schumpeterian product and process innovation. However, the use of improvement and incremental innovation in innovation surveys will be problematic from a conceptual point of view, since the transition from the improvement mode to the incremental mode has to be interpreted as a social construction (Weick, 1995; Gallouj and Weinstein, 1997).

Den Hertog (2000) proposes a four-dimensional model of service innovation and differentiates between technological, conceptual, client-interface and service delivery innovation. According to Den Hertog, any service innovation involves some combination of these dimensions. However, the dimensions are ill-specified, which makes the model difficult to judge. We doubt whether the proposed dimensions are mutually exclusive. In particular, client interface innovation, service delivery innovation and technological innovation seem to overlap.

'Transaction innovation' proposed by Jacobs and Waalkens (2001) is an example of a process innovation in the Schumpeterian sense and the last reference in the NTI review of Den Hertog *et al.* (2004). It is the introduction of new ways of commercializing products and services. E-business is a case in point. Its Schumpeterian meaning is obvious, since Schumpeter emphasizes the value of new ways of handling a commodity commercially (Schumpeter, 1934).

2.2.1 Organizational Innovation

An important subset of NTI is organizational innovation. The two innovation forms are sometimes even considered as synonymous (Van der Aa and Elfring, 2002; Den Hertog *et al.*, 2004). Organizational innovation is widely regarded as 'important organizational change' (Gjerding, 1996; Tether and Hipp, 2000). However, 'important change' might be firm or sector specific, which makes it difficult to sum up organizational innovation to an aggregate level (OECD-EUROSTAT, 1997). Besides, it is questionable whether 'important organizational change' is consistent with the Schumpeterian view on organizational innovation. Initially,

Schumpeter (1934) regarded organizational innovation as the deliberate reorganization of an industry. However, as Drejer (2004) shows, Schumpeter indirectly broadens the concept of organizational innovation in his later work.

Van der Aa and Elfring (2002) introduce three forms of organizational innovation with specific relevance for services. They argue that service innovations with pure organizational aspects are scarce. The 'multi-unit organization' (Van der Aa and Elfring, 2002) is reported as an exception, although it seems foremost an indication of growth and geographical expansion. The 'customer as co-producer' is an innovation form in which the role of the customer is redefined. The denomination 'customer as co-producer' for a service innovation, however, is somewhat surprising, because it represents a service peculiarity as well and it suggests that customers co-produced the innovation. Probably for this reason, it is renamed by Van der Aa in later work as 'new roles for the customer' (Vermeulen and Van der Aa, 2003). The innovation form 'new roles for the customer' is not a convincing example of organizational innovation, since the introduction of new roles for the customer seems predominantly the introduction of self-service systems. E-ticketing is a case in point. The technological component of E-ticketing is obvious; the organizational aspects of E-ticketing are less prominent.

The most difficult form of organizational innovation proposed by Van der Aa and Elfring is 'new combination of services'. It is presented in the literature with different labels like architectural innovation (Henderson and Clark, 1990), bundling (Normann, 1991), modulization (Sundbo, 1994) and recombinative innovation (Gallouj and Weinstein, 1997). Van der Aa and Elfring (2002, p. 162) hold that 'in many new combinations in services the components are not that novel at all. Rather, the new concept derives its novelty from the way the components are combined.' The linkages between the components embody the newness (Van der Aa and Elfring, 2002). However, the meaning of 'linkage' in a service setting is not self-explanatory. It is not clear in how many empirical cases bundling is 'only' the reduction of redundancy or, in fact, a temporary rearrangement of the service portfolio for commercial reasons.

2.2.2 External Relationship Innovation and Expertise-field Innovation

Other innovation concepts developed especially for services are 'expertise-field innovation' (Gallouj, 2000) and 'external relationship innovation' (Djellal and Gallouj, 2001). External relationship innovation is the establishment by a firm of particular relationships with partners (customers, suppliers, public authorities or competitors). It can be regarded as a subset of organizational innovation in the original Schumpeterian sense (industry reorganization).

The expertise-field innovation concept has emerged in innovation research in consulting firms. It is a form of innovation that consists of detecting new needs and responding to them through a process of accumulating knowledge and expertise (Gallouj, 2000). Gallouj (2000, p. 133) describes expertise-field innovation as 'potential' innovation: 'expertise field innovation remains potential, and will only be materialized in interaction with the client'. This seems to suggest that customers influence the manifestation of the innovation, which seems not to fit with Schumpeter's opinion on product innovation or process innovation. Therefore, expertise-field innovation can only be considered as a specific case of market innovation.

2.3 A Synthesis

Innovation studies adhering to the assimilation approach report a lot of variation in the dominant technological regimes in service industries, if any, and intra-industry heterogeneity. The premise of a single and service-specific mode of innovation is not tenable. Technological change in service industries is not just supplier-dominated as initially suggested. Various service sectors are both users and producers of new technology.

TABLE I Classification of the reviewed service innovation concepts.

Service innovation concept	*Activities that might lead to innovation*	*Refinement of the Schumpeterian innovation forms*	*Aspects of service innovation*	*Schumpeterian innovation forms covering the service innovation concepts*				
				Product	*Process*	*Market*	*Organizational*[1]	*Input*
Ad-hoc innovation	x							
Formalization innovation	x							
Radical, improvement and incremental innovation		x		x	x			
Recombinative innovation/new combination of services		x		x	x			
Expertise-field innovation		x				x		
Customer as co-producer		x		x	x			
Multi-unit organization		x				x	x	
External relationship innovation		x					x	
Conceptual innovation		x	x	x	x			
Delivery innovation		x	x	x	x			
Client-interface innovation		x	x	x	x			
Technological options		x	x	x	x			
Transaction innovation		x			x			

[1]In this table, we have applied Schumpeter's most recent opinion on organizational innovation.

An assimilative approach to service innovation diminishes the scope of Schumpeter's pioneering analyses. However, that is not a sufficient argument for preferring a demarcation approach to service innovation. Market innovation, organizational innovation and input innovation make sense in both manufacturing and services. Therefore, non-technological change is advanced as a blank spot in the service innovation domain. However, the Schumpeterian meaning of studying the non-technological change in service firms seems limited since, in most cases, the non-technological change is too firm specific or intermingled with technological change in an innovation event. Moreover, non-technological change is taking place in manufacturing as well. Nevertheless, a number of service-specific innovation concepts emerged in the literature. These concepts can be classified as (1) an over-stretch of the Schumpeterian innovation notion, (2) a refinement of the Schumpeterian innovation forms and (3) an aspect of Schumpeterian innovations in service firms. This classification is illustrated in Table I.

2.4 A Technology Approach to Service Innovation

Many of the claimed peculiarities of services innovation, such as a strong presence of organizational innovation and the involvement of multiple actors in the process of innovation, do also apply to manufacturing (Drejer, 2004), but does this justify the need for a synthesis approach as Drejer (2004, p. 560) proposes? Do these peculiarities highlight new types of innovation? We argue they do not, though strictly, applying Schumpeter's five areas of innovation points rightly to the need for a synthesis approach. Technological change embedded in products and processes covers just two of the five innovation areas suggested by Schumpeter

(1934). Nevertheless, we propose to focus predominantly on technological change in service innovation studies, while taking the industry heterogeneity described in the subsection 2.1 into account. This means paying attention to the reinvention, creation and use of new technologies in services. The adoption of new technologies without significant problem-solving effort is excluded from our proposal, because we set a high value to creativity.

We consider technology as the application of knowledge from natural sciences or other organized knowledge for practical purposes, the evolution of technology as the evolution of the 'made' world (Basalla, 1989) and a technology as a coherent and meaningful part of the 'made' world; an object, a process, or more commonly, some integration of the two (Harbour and Blackman, 2006). This is a narrow definition of technology compared with, for example, Evangelista (2000) who defines technology in a very broad sense, as 'the complex set of knowledge, capabilities, routines, competencies, equipment and technical solutions necessary to produce a product or deliver a service'. Evangelista considers in his questionnaire a service to be technologically innovative when its characteristics and modalities of use are either completely new or have been significantly improved from a qualitative point of view, or in terms of their performance and technologies used. This, however, leaves a lot of conceptualization to the respondents.

Although we intuitively know that a service experience is a complex function of various factors (Storey and Easingwood, 1998; Fitzsimmons and Fitzsimmons, 2000) and we agree that from a perspective of firm competition it is interesting to comprehend this complexity, using the complexity as an argument for stretching the innovation notion seems invalid. Innovation has a predominant technological connotation (Harbour and Blackman, 2006). Moreover, organizational, cultural or even esthetical changes, suggested for example in Miles (2006), are too idiosyncratic.

Limiting innovation in services just to the production and use of technologically advanced artefacts means ignoring the creative use of new technologies in services – through adoption and reinvention processes – which often reflects an ability to interpret poorly specified individual customer requirements (Tether, 2005). Therefore, our plea for a technology approach to service innovation should not be interpreted as a plea for an assimilation approach, but as a plea for a demarcation approach focusing on technological change and aimed at explaining economic growth in services, both at the firm and sector level. Our plea is contrary to the recent contributions of Tether (2005) and Miles (2006) who propose to move away from a model of innovation that puts all the emphasis on artefacts and technological innovation. For identification reasons, we doubt the value of introducing new innovation domains (Tether, 2005) or modeling innovation in terms of changes in market relationships (Miles, 2006).

An implication of an extended technology approach to service innovation studies might be that other aspects of services dynamics – both at the firm level and beyond – with growth consequences are missed. Therefore, we propose to consider service innovation as a specific case of service development in the next section and explore other modes of service development as well.

3 SERVICE INNOVATION AS A SPECIFIC CASE OF SERVICE DEVELOPMENT

In this section, we conceptualize service innovation as a specific case of service development in order to simplify the identification of innovation in service firms. Service innovation is specified by means of specific case criteria with a close reference to Schumpeter, as Drejer (2004) proposes. Inspiration for this approach has been obtained from Sundbo and Fuglsang (2004), who argue that development is more characteristic for the growth and success of modern organizations than innovation. Subsequently, we conceptualize service delivery (in subsection 3.1) and

service development (in subsection 3.2) and describe drivers and modes of service development in subsection 3.3.

3.1 Service Delivery as a Transformation Process

Studying service development requires first of all defining services in a meaningful way. Service delivery is widely considered as a transformation process (Gadrey *et al.*, 1994; Miles, 2006). It is defined as 'the transformation of some reality C, possessed or used by a consumer B, which is carried out by a provider A at the request of B, often in co-operation with B, but not leading to the production of a good capable of circulating in the economy separately from its support C' (Gadrey *et al.*, 1994, p. 5). The transformational efforts can affect the state of (1) the environment, (2) artefacts produced by other sectors, (3) people or (4) symbols (Miles, 2006).

The transformation view on service delivery makes sense, though the definition of Gadrey *et al.* (1994) is a strong simplification of practice. First, many reality-request sets are ambiguous and have a different meaning for the customer and the service provider for reasons of information asymmetry. The mode of the transformation process is strongly determined by the service provider's perception of the reality-request set. Sometimes, reality-request sets are reframed by the provider A in order to improve the fit between the reality-request set and the abilities of A's delivery system. Second, the initial request changes frequently during the interaction between customer and service supplier. Exploring the reality-request set is part of many services, especially in the case of personal interactive services (Mills and Margulies, 1980). Third, not all attempts to transform the customer's reality succeed. Not all therapy helps and not all interim managers meet the objectives agreed on. Therefore, we consider the marketing of services as the marketing of transformational promises.

On account of this, we consider Gadrey *et al.* (1994) definition of service delivery as too much an oversimplification of practice. We propose an adjusted definition and argue that service delivery in the case of customer B is 'the transformation of B's reality C or an attempt to transform B's reality C, as constructed by its service provider A, at the request of B and frequently in cooperation with B'.

With this definition we want to emphasize that, in many cases, the efforts of supplier A are not focused on transforming a static reality C possessed or used by customer B, but on transforming a dynamic reality C as constructed in interaction with B (Weick, 1995).

Finally, firm resources, competences and capabilities are employed in order to redeem the transformational promises. Note that this is suggested by Gallouj and Weinstein (1997) as well, who describe the production of a service as placing a bundle of capabilities and competences at the disposal of a client.

3.2 Service Development

Service development at the firm level is considered from a supplier perspective and conceptualized as 'a change of the employed resources, competences or capabilities, supposed to enable the realization of a service firm's transformational intentions'. This change can be caused by changing transformational intentions or be a consequence of, for example, customer feedback, failing transformational efforts, learning processes or the mobility of human resources. Service development is not limited to the expansion and differentiation of transformational processes. On the contrary, it implies in various cases its standardization or simplification.

Service development requires interaction with customers. Services cannot be stored and developed in specific departments, though the contours or the specifications of the intended interaction with the customer, the enabling technology, the required competences and the

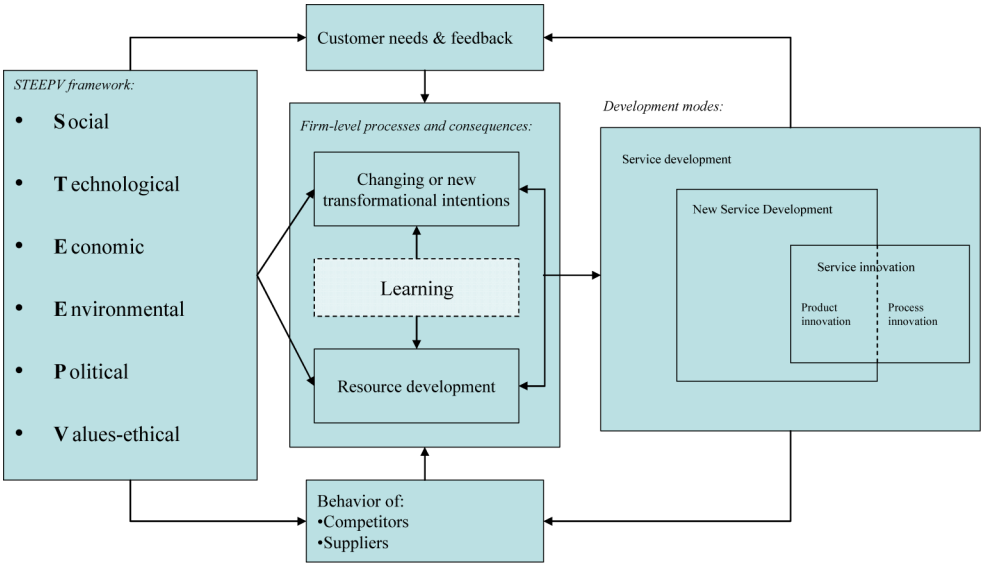

FIGURE 1 A service development framework.

servicescape (Bitner, 1992) can be designed and developed in advance (Shostack, 1984). In many cases, however, service development is not budgeted, prepared and management controlled.

3.3 Drivers and Modes of Service Development

In this subsection, we explore the drivers and modes of service development at the firm level. We distinguish four modes of service development. Two of them do imply service innovation. The STEEPV driving forces are used to explain the four development modes (Fig. 1).

According to our service development framework, the STEEPV forces drive change at the service firm level both directly and indirectly, i.e. through changing the customer needs – experienced predominantly by customer feedback – and through observed behavioral changes of competitors and suppliers. The inter-related consequences of the STEEPV forces and learning processes are modeled in the heart of the service development framework, uncovering the path between the STEEPV forces and the different development modes.

3.3.1 Illustration of the STEEPV Driving Forces' Impact

We illustrate the STEEPV driving forces of service development with examples from the Dutch service industry. Most of the examples, however, are illustrative for service development in various countries in the European Union and beyond.

1. Social change: aging of the Dutch population. In order to meet the needs of an expanding elderly population, various service firms offer new health, education, job, cultural and leisure facilities. Universities, for example, offer post-career education programs, travel agencies offer senior travel programs and employment agencies consider pensioners as a new target market.

2. Technological change: the Internet revolution. The impact of the Internet revolution on the service industry is obvious. First, Internet providers make a new service sector. Second, Internet offers a new market(ing) place and distribution channel to service firms and enables direct

interaction with customers. In financial services, for example, the role of intermediaries gets therefore less self-evident. Third, making use of Internet in an effective way requires a clearly structured, interactive website, which has triggered the emergence of web design services. Fourth, consulting firms have developed e-commerce programs, with which they help their customers to shape and embed e-commerce activities in an appropriate way. Fifth, improper use of Internet has triggered the emergence of security services, such as, for example, firewalls and virus scanners. Sixth, the overwhelming supply of (new) information has triggered the development of search engines and, for example, RSS (Really Simple Syndication) feeds. Finally, direct marketing services on the Internet emerge through the introduction of gmail, using e-mail content in an intelligent way for direct marketing purposes. Note that this enumeration of Internet consequences is incomplete and can be expanded with a number of new developments in the near future.

3. Economic change: house prices continue to rise. Rising prices of houses have improved the property position of many Dutch households. Financial service firms stimulate these households to utilize the surplus value for closing surplus-value-mortgages. These mortgages enable the beautification of houses. Besides surplus-value-mortgages, financial service firms offer households 'Rent your own house' products giving a house owner the opportunity to sell his house to a financial service firm and rent it afterwards.

4. Environmental change: soil pollution. Soil pollution is a consequence of the industrialization of western societies. In case of disappearing industries, soil remediation is a precondition of using industrial locations for alternative purposes. Many firms of consulting engineers have developed soil remediation technologies and programs as a consequence of the de-industrialization of many areas and the publicity given to soil pollution.

5. Political change: liberalization of the energy market. The liberalization of the energy market implies that customers are allowed to select an energy supplier themselves since 2004. This means that the energy market is confronted with new phenomena: market entrance and competition. In order to beat the competition, energy suppliers develop augmented service offerings. Online 'My energy' services inform customers accurately about their energy consumption and about ways of saving expenses.

6. Values-ethical change: sustainability. The rise of prosperity in the past decades in Western economies has been allied increasingly to the awareness that with the current use, our natural resources will be exhausted soon. Sustainability has emerged as an important value in today's society. Many service industries adapt to this shared conviction by introducing sustainable offers. Examples can be found in financial services, car leasing, construction and tourism.

3.3.2 Modes of service development

New Service Development We consider new services as the output of NSD processes (see Johne and Storey (1998) for a comprehensive review of the NSD literature) – requiring demonstrable investments at the firm level – and conceptualize a new service as 'a uniquely marked offer, announced as a new service, which is sold separately'. It must be possible to 'queue up' for a new service, which means that the introduction or emergence of new and uniquely branded service lines, as frequently observed in KIBS, are excluded from our new service conceptualization, as well as for-free-services. Product innovation in service firms is considered as a subset of new services, which means that the relationship between product innovation in service firms and new services is not reciprocal. Technological change is the proposed discriminator.

Service Innovation We propose to conceptualize service innovation as 'technological innovation in service firms' and to distinguish product innovation from process innovation, despite the simultaneity of the production and consumption of services. Product innovation in service firms is conceptualized as 'the exploitation of a new technology enabling a new service or a new way – at least new to the firm – of exploiting an existing technology, announced as a new service'. Process innovation or delivery innovation (Preissl, 2000; Tidd *et al.*, 2005) is conceptualized as the adoption and reinvention of, or the production of, a new technology and its application; both cases aimed at improving existing services. The introduction of process innovation may be intended to produce or deliver innovated services that cannot be produced or delivered using pre-existing production methods or to improve the production or delivery efficiency of existing services (Evangelista, 2000, p. 219). The examples used here to illustrate the proposed conceptualization of service innovation are deduced from the trademark dataset of the Benelux Trademark Office in The Hague.

Exploitation of a New Technology: The Introduction of the Resultroom® The Steigenberger Kurhaus Hotel in Scheveningen has developed an innovative boardroom with help of the Delft University of Technology. Premise of this product innovation is that a correct atmosphere contributes positively to the output of a meeting. Different mixes of sounds, smells, images and colors are deliberately matched with the distinguished stages of conferencing processes, which make the participants more aware of the different jobs to be done.

A New Way of Exploiting an Existing Technology: The Introduction of Hay PayNet® The Hay Group, a global management consulting firm, introduced PayNet®, an online compensation and benefits portal. Pay Net® is an Internet-based platform that enables licensed users worldwide to access and analyze compensation information from almost 11,000 organizations in over 60 countries. Users typically include HR professionals who require high-quality, detailed information for rigorous compensation planning and analysis or line managers and senior executives who need to make informed decisions across a wide range of functions or locations.

Process Innovation: DOVA® The Vedior group of companies, providing staffing services, stretches across 44 countries globally and on practically every continent. Many of these companies have websites in many different languages, and many of these company websites have jobs from that company posted on them, often fed from a database. The DOVA system has been designed to unify all of these different data sources and enable them all to be intelligently searched from within one environment, regardless of the original source data type. The system can search across multiple databases, countries and languages at the same time and return the results in practically any format or style.

According to Schumpeter (1934), the motives of innovation are economic in character. This should apply to service innovation as well. Therefore, we consider service innovation as service development driven by economic motives. However, economic motives are a necessary but not sufficient condition for labeling service development as innovation. Schumpeter (1934) emphasizes that innovation is the introduction of a novel artefact in the market: a new good, a new quality of a good, a new production method or a new way of handling a commodity commercially. This implies that service innovation is the result of a search process in the technology domain – requiring demonstrable investments – that not necessarily can be identified at the firm level as Sundbo and Fuglsang (2004) suggest, since sometimes the process is outsourced (Barras, 1990). One of the consequences of this

criterion is that knowledge codification really matters in the service innovation process, though Leiponen (2003) doubts this. Third, Schumpeter disagrees with the claim that 'innovation' is an appropriate label for the 'design and development stage' (Shostack, 1984) and its output unconditionally. He states that inventions are economically irrelevant if they are not carried into practice. Therefore, the novelty should ultimately be commercialized (see also Von Stamm (2003, p. 19) who argues that innovation = creativity and commercialization). Apprehending 'commercialization' requires taking a broad view, since we distinguish both product and process innovations. Fourth, Schumpeter (1934) holds that 'reproducibility' is one of the demands to be made to innovations, as one-offs have no impact on economic development. The meaning of producing a service, however, is limited. Therefore, we propose to drop the reproduction requirement, but adhere to the conviction that an innovation has only taken place when something new is developed, which is applied in relation to several customers (Drejer, 2004; Toivonen, 2004).

As partly justified in the subsection 2.4, we propose a firm-level approach to service innovation (Simonetti *et al.*, 1995) as opposed to Schumpeter who demands at least sector-level newness. However, as the market for many service sectors is – even after accepting the Bolkestein directive by the European Parliament – geographically restricted, regional and local novelties may be of great significance for the productivity and competitiveness of service firms (Toivonen, 2004). Moreover, from an economic perspective, imitation is interesting as well. Bolton (1993) argues that imitation is a viable strategy in an industry with weak property rights. This certainly applies to the service sector (Andersen and Howells, 2000). And, what is actually imitation? When imitation is attempted under conditions that permit only limited access to the thing imitated, it becomes very similar to innovation and, of course, is unlikely to yield an exact copy (Winter, 1984). Finally, Cobbenhagen (1999, p. 40) found 'companies themselves tend to use a more relaxed definition for innovation'. In his study on non-sector-specific success factors of innovation at the company level, he found that only very few managers regarded 'new to the world' or 'new to the manufacturing or service sector' as their criterion.

Both the economic motives of service innovation and the deliberately initiated search processes imply an active role for the entrepreneur or the service firm's management. Service innovation requires definitely a management decision. Therefore, it is in our view not typical of service innovations that they are seldom the results of planned and deliberate activity as Toivonen (2004, p. 87) suggests.

Service Development Paid by the Customer Service innovation and NSD cover three out of four service development modes, as modeled in Figure 1. The fourth development mode is a kind of residue, covering various changes in service firms, but foremost the development of knowledge intensive services: service development paid for by customers.

Service development in firms earning their income predominantly from partly customized and bespoke services (Tether, Hipp and Miles, 2001) is closely bound up with the heterogeneity of customer requests and realities. The heterogeneity – or as we have discussed in the subsection 3.1 'the constructed heterogeneity' – triggers the reconsideration and adjustment of service practices and delivery processes. In most cases, this is paid for by the customer, who acts as a co-developer (Hamel, 2000; Jeppesen and Mohlin, 2003). Besides, service development in KIBS is a consequence of customer feedback and learning processes (Boisot, 1995; Sivula *et al.*, 2001; Flikkema *et al.*, 2003; Fosstenlökken *et al.*, 2003; Boisot and Canals, 2004), for example through socialization (Nonaka and Takeuchi, 1995). The result of learning processes is knowledge, both tacit and explicit (Polanyi, 1958) and both individual and organizational (Nelson and Winter, 1982; Cook and Brown, 1999).

Changes in knowledge result in changes in routines, (joint) behavior and service practices and processes.

4 THE DENOMINATION OF SERVICES

Strictly, services can not be hold. Nevertheless, services are denominated by its supplier with names, suggesting for example distinct 'treatments', 'facilities', 'programs', 'courses', 'expositions', 'messages' or 'methods' and sometimes even synthesizing the intentions of the service supplier: see for example the Resultroom®, the trademarked innovative boardroom of the Kurhaus Hotel illustrated in the subsection 3.3.2. For marketing and accounting purposes, it is even a must to denominate services (see for example, Crawford (1985) and Blankson and Kalafatis (1999) on the positioning of service brands).

Changes in the denomination and branding of services might be an interesting clue for future research on service development and innovation, in particular on NSD and product innovation in service firms. This is confirmed by Von Stamm (2003) and by Schmoch (2003) and Mendonça *et al.* (2004), who argue that trademarks are an important indication of innovation and industrial change.

Microanalysis of trademark data is needed in order to understand (1) the percentage of trademarks representing service innovation, (2) the propensity to trademark innovation in different service sectors, (3) the motivation to trademark innovation or to leave it undone and (4) the relationship between the trademarked service innovations and the NICE and NACE classes.

5 CONCLUSIONS

More than a decade of academic dispute has not led to consensus of opinion on the conceptualization of service innovation. As a consequence, the economic impact factor gets too less attention.

In this article, we have conceptualized service innovation as a specific case of service development with a close reference to Schumpeter, but not as strict as recently proposed. Therefore, our extended technology approach is denominated as neo-Schumpeterian. With this approach, we want to emphasize that many service firms do not excel in the production of technologically advanced artefacts, but foremost in its creative use.

Since organizational, conceptual or even esthetical changes are too idiosyncratic, we propose to confine service innovation to technologic innovation in service firms, despite a service experience being a complex function of various factors.

Acceptance of our approach to innovation in service firms implies that the identification of innovation in services is not complicated by service characteristics, i.e. innovation-on-the-service-job has no conceptual meaning. Although customization processes and learning-on-the-service-job can be important impetuses to innovation, neo-Schumpeterian innovation in service firms is limited to budgeted development initiatives, using technology in a creative way, aimed at expansion of the service portfolio or improvement of existing services.

As long as conceptual clarity and consensus fails to come, policy making and evaluation with respect to service innovation will remain problematic. The same holds for answering the question whether innovation policy should have to differentiate between manufacturing and services or between business-to-business and business-to-consumer services. We cannot permit to discuss the conceptualization of service innovation for another decade.

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