Exploring service development for understanding Schumpeterian innovation in service firms: the deduction of special case criteria.

Meindert Flikkema

Abstract

The identification of innovation in services is problematic. This seems remarkable, since many papers have emerged, which emphasize distinctive features of service innovation. However, some of these contributions strain the Schumpeterian innovation opinion or describe in fact the role of service firms in systems of innovation. In the present paper service innovation is concerned as a special case of service development and a direct reference to Schumpeter is made as Drejer proposes (Drejer, I., 2004. Identifying innovation in surveys of services: a Schumpeterian perspective. Research Policy 33, 551-562). With the deduction of ‘special case criteria’ the paper contributes to tackling the identification problem.

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1 Tel.: +31-20-5986189; fax: +31-20-5986005
E-mail address: mflikkema@feweb.vu.nl (M.J.Flikkema)
1. Introduction

Since the 1980s the attention paid to innovation in services and new service development (NSD) has increased enormously. The rise of the service sector, increasing use of ICT and the increasing quality awareness are carried up as its main explanations (Miles, 2004). However, for at least three reasons theory building is still in its infancy. At first, different research traditions on innovation intertwine. This applies especially to the Schumpeterian tradition that roots in economics (Schumpeter, 1934) and the tradition initiated by Rogers and Shoemaker (1971) that roots in social sciences. This is problematic, since these traditions focus on different entities, motives and behavior. Second, service characteristics cause severe problems with the identification, classification and appropriation of novelty in services. The heterogeneity of customer requests and realities, the customer as co-producer and the intangibility of the service output are characteristics we are still not able to cope with in service innovation research. The level of service analysis to be employed in service innovation research should reflect these specific service properties. However, in some cases the employed level of analysis is too micro. In these cases single service deliveries are concerned and the adaptation of the service provider to heterogeneous customer requests is labeled as (ad-hoc) service innovation (Gallouj and Weinstein, 1997) or as emerging innovation (Flikkema et al., 2003). But is adapting to heterogeneity not part of the service job? And if we confirm this, is it justified to say that innovation does imply investments on the firm level? Or is adapting to heterogeneity only innovation in some cases? Cases in which explicit or implicit heterogeneity borders are crossed? It seems to make sense to distinguish developments in services that imply innovation and developments that do not. But that
implies that we have to start with exploring the development of services in all its shapes. Third, we are not very familiar with the innovation process in service firms yet since there is a lack of case-study research on service innovation. This might look conflicting with the too micro level of service analysis addressed before, but it is not. The cases proposed here are service innovations, not the emergence of novelty during a single service delivery or the ‘harvest’ of knowledge through codification afterwards or anyhow. Case-study research will teach us about the loci, stages, output, organization and governance of the innovation process, about the involved actors, about differences on the innovation and firm-level and about the usefulness of existing new product development (NPD) models (see Dolfsma, 2004 for an overview of NPD models).

We can conclude that there is an obvious need for defining Schumpeterian innovation in service firms more precisely. We clearly have an identification problem. Solving it is a prerequisite for meaningful research on innovation on the firm level, the service industry level and beyond. Therefore, tackling the identification problem is the main purpose of this paper. To accomplish this, service innovation is regarded as a special case of service development and a direct reference is made to Schumpeter as recently proposed by Drejer (2004). With that defining service innovation more clearly is in fact determining ‘special case criteria’ from the Schumpeterian perspective.

This article is divided into three sections. Theory on service innovation is reviewed in the first section. Attention is paid to both technological and non-technological aspects of service innovation. The review makes clear that some of the service specific innovation concepts, which emerged in the last decade, strain the Schumpeterian innovation opinion, while others can be regarded as aspects of innovation or a refinement of the
Schumpeterian innovation forms. We proceed with an elaboration of service development in the next paragraph, by adopting a transformation view on services. In addition, three levels of service analysis are introduced: the single service level, the service line level and the service portfolio level. It is argued that studying service development is most relevant on the service line and portfolio level. Five triggers of service development are carried up to show this. In the third section the Schumpeterian innovation tradition is reviewed briefly. The manufacturing oriented Schumpeterian innovation forms are translated into a service equivalent with special attention for product and process innovation. As a consequence innovation criteria for the identification of product and process innovation in services emerge. The conclusions of this paper are followed by suggestions for the measurement of service innovation and future research.

2. Theory on service innovation

Since the 1980s in fact three approaches have been employed to describe, analyze and explain innovation in services: the assimilation, the demarcation and the synthesis approach (Coombs and Miles, 2000). In the assimilation approach innovation in services is seen as fundamentally similar to innovation in manufacturing, and it should therefore be studied using methods and constructs for manufacturing. According to the 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. The synthesis approach recognizes that studies on innovation in services have thrown light on neglected aspects of innovation processes in general, highlighting different types of innovation.
2.1. Technological innovation

The primary source of reference for most ‘assimilative’ contributions to understanding innovation patterns and technological change in the service sector is the well-known taxonomy of technological change developed by Pavitt (1984). However, this taxonomy deals mainly with manufacturing. Service industries are concerned as ‘supplier dominated’. 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 who discussed 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 that commonly identified as prevailing in those sectors which produce the capital goods embodying the new technology (Barras, 1990). The RPC is attended with 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 in the first stage, it shifts to the user in the second stage and according to Barras (1990) the third stage of the RPC can be described best 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). He proceeds with ‘such activities are either pursued by special departments within the major firms in the industry, or alternatively by subcontracting to small specialist consultancies which grow up to service these major firms’. In later work, Pavitt et al. (1989) have modified the ‘1984 taxonomy’ inspired by the work of Barras.
They have introduced a new category called ‘information-intensive firms’, covering industries such as the financial sector or retailing, while other service industries (e.g. software) were identified as ‘specialized suppliers’. This modification has been thoroughly revised by Soete and Miozzo (1989) who elaborated a threefold taxonomy on innovation in services. Besides the supplier dominated service firms they elaborated the category ‘network-based industries’, which covers two subgroups, namely, ‘scale-intensive industries based on physical networks’ (for example transport) and ‘industries relying on information networks’ (as in financial services). The latter draw heavily on information technologies (IT). More recently Evangelista (2000) has introduced an alternative taxonomy -based on results from an Italian survey- with four sectoral patterns of technological change in services. Especially the ‘interactive and IT based’ pattern deviates strongly from Pavitt’s original taxonomy. It reflects the importance of interaction between the service provider and final users and the widespread use of IT in some service sectors. Den Hertog (2000) proposes five patterns of services innovation derived from casuistry. As Evangelista he emphasizes the role of the client firm or final consumer in the innovation process. Most notable is the ‘innovation through services’ pattern. It is about providers of intermediate services that co-produce innovation, taking place within the client firm. However, co-producing innovations in client firms does not imply co-innovation or inter-firm innovation (Bossink, 2002). In fact, Den Hertog is describing the role of knowledge intensive service firms in regional or national systems of innovation here.

Most of the taxonomies mentioned thus far are based on industry level analysis (Evangelista, 2000; Pavitt, 1984; Pavitt et al., 1989; Soete and Miozzo, 1989). It is
therefore (implicitly) assumed that innovation patterns at this level of aggregation are homogenous. Hollenstein (2003) has tested the homogeneity assumption using data from the Swiss service sector. Based on an analysis of firm-level data he shows a clear and positive correspondence between industries and innovation modes. On the other hand, four out of five innovation modes are distributed quite widely across industries.

2.2. Non-technological innovation

Besides the homogeneity assumption Hollenstein (2003) addresses another limitation of the industry-level analyses. They take almost exclusively technological innovations into consideration. This represents a diminution of 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, implicitly adopting the demarcation or synthesis approach (Den Hertog et al., 1997; Den Hertog et al., 2004; Gallouj, 2000; Gallouj and Gallouj, 2000; Gallouj and Weinstein, 1997; Sundbo, 1997; Sundbo and Gallouj, 2000). 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 as driving forces (Dosi, 1982). ‘Loosely’ because according to Sundbo and Gallouj, ‘the constellation between the actors, the trajectories and the behavioral forms is not very fixed; it may take different forms’ (p.61). Among the four types of non-technological trajectories the ‘service professional trajectory’ seems most relevant. Service professional trajectories are changes in ‘methods, general knowledge and behavioral rules that exist within the different service profession’ (Sundbo and Gallouj, 2000, p. 50). We subscribe the
relevance of the non-technological trajectories for service innovation and service
development, but doubt about the meaning of the seven service innovation patterns
proposed by Sundbo and Gallouj. These patterns seem predominantly a mix of:

• the ways service innovation is organized (the industrial and neo-industrial pattern, the
  organized strategic innovation pattern, the network pattern);

• a way a novel product or service is introduced into the market (the entrepreneurial
  pattern);

• the ways professional and operational services develop (the service professional
  pattern and the artisanal pattern).

But what is after all a strictly technological view on innovation in services? 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’. But that means that non-
technological innovations seem not to exist and requires a definition of ‘innovation
activities’ and ‘technologically new’. In a Schumpeterian sense ‘innovation activities’
can be regarded as activities that contribute to the realization of one of the five
distinguished forms of innovation (Schumpeter, 1934). However, the Oslo Manual is not
very clear on technological newness. So, non-technological innovation keeps a fuzzy
concept. Den Hertog et al. (2004) propose a distinction between non-technological
aspects of innovation (NTA) and non-technological innovations (NTI). With respect to
NTA they emphasize that innovative success requires innovative organizations and
various types of non-technological competencies. So, non-technological innovation is
described in terms of ‘competencies’ and ‘organizational characteristics’ instead of ‘activities’ as in the Oslo Manual. This seems a case of mingling factors that foster innovation with actual innovation. The NTI research review of Den Hertog et al. (2004) is partly illustrative for the over-stretch of the Schumpeterian innovation notion in service innovation research addressed by Drejer (2004). In addition, parts of the research review on NTI can be regarded as a refinement of the Schumpeterian innovation forms. Finally, the NTI review shows an overview of technological and non-technological aspects of service innovations (TAIs and NTAIs). The six types of innovation proposed by Gallouj and Weinstein (1997) pass in review first. Gallouj and Weinstein try to lay the foundations for an integrative innovation theory by using Lancaster’s definition of the product as a set of service characteristics (Lancaster, 1966). They differentiate between six forms of innovation: radical, improvement, incremental, ad-hoc, recombinative and formalization innovation. Drejer (2004) shows that ad-hoc and formalization innovation have no Schumpeterian meaning. She rightfully observes that it is a case of mingling activities -learning and codification- that might lead to innovation with actual innovation. Radical, improvement, incremental and recombinative innovation can be regarded as a refinement of the Schumpeterian product and process innovation. However, the use of improvement and incremental innovation will be problematic from a methodological 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, so they do not represent forms of service innovation primarily but TAI s and NTAIs (see figure 1). In addition, we doubt whether the proposed dimensions are mutually exclusive. Especially client interface, conceptual innovation and technological innovation seem to overlap. Transaction innovation proposed by Jacobs and Waalkens (2001) is an example of an NTAI. Besides, they propose, as Den Hertog (2000) does, to distinguish ‘business concept innovation’. However, the use of ‘conceptual’ or ‘business concept’ is in our opinion not very meaningful. The focus is on the ‘service business’, so ‘business’ concept innovation seems a synonym of service innovation. The fuzziness of these constructs does not enhance our ability to identify service innovation. Van der Aa and Elfring (2002) propose a distinction between organizational and technological innovation. They elaborate three forms of innovation with special relevance for service firms though from another theoretical perspective. They use a stretched innovation definition that refers to Rogers and Shoemaker (1971). Nevertheless, as they agree on themselves, service innovations with pure organizational aspects are scarce. The ‘multi-unit organization’ (Van der Aa and Elfring, 2002) can be regarded as an exception. However, from the Schumpeterian perspective, the multi-unit organization can be regarded as a process innovation in service firms or as an organizational consequence of market innovation. This depends on the underlying intentions. The innovation form ‘customer as co-producer’, i.e. redefining the role of the customer can be regarded as a process innovation as well, though it is a strange label for a service innovation since it represents a service peculiarity as well. The most difficult form of organizational innovation proposed by Van der Aa and Elfring is ‘new combinations of services’. It is presented in the literature with different labels like
architectural innovation (Henderson & Clark, 1990) bundling (Normann, 1991), modulization (Sundbo, 1994) and recombinative innovation (Gallouj & Weinstein, 1997). As Van der Aa and Elfring (2002, p. 162) describe, ‘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 re-arrangement of the service portfolio for commercial reasons. In the former case it can be regarded as process innovation (the efficiency improves), in the latter it is no innovation. The question whether some bundling should be denominated as product innovation can not be answered that easy. It seems meaningful to analyze the underlying intentions of the innovation efforts, i.e. does the bundling refer to strongly deviating customer needs? Does this all mean that organizational innovation has no meaning in a service setting? It depends on its definition. The most workable definition of organizational innovation seems ‘important organizational change’ (Gjerding, 1996). However ‘important’ might be firm or sector specific as Gjerding suggests, which makes it difficult to sum up organizational innovation to an aggregate level (OECD-EUROSTAT, 1997). Moreover, theoretically, organizational change encompasses both product and process innovation, since many service innovations have organizational aspects. For example Preissl (2000) shows that innovation surveys do not provide meaningful results for the distinction between process and organizational innovation in services. In addition, it is still questionable whether organizational innovation is congruent with the Schumpeterian
view on innovation, especially when organizational innovation is regarded as a very broad concept including for example strategic and managerial change. 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 later work. Following Preissl, we doubt whether it is recommendable from a methodological point of view to broaden the Schumpeterian concept of organizational innovation and propose to stick to its original meaning in service innovation research.

Other innovation concepts developed especially for services and not in the NTI review of Den Hertog et al. (2004) are ‘expertise-field innovation’ (Gallouj, 2000), ‘external relationship innovation’ (Djellal and Gallouj, 2001) and ‘service-stretching’ (Flikkema et al., 2003). External relationship innovation is defined as 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 meaning (industrial organization). Both the expertise-field innovation concept and the service-stretching concept have emerged in innovation research in consulting firms. Expertise-field innovation 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). As in the service-stretching case it can be described as deliberate investments in expanding the consulting domain and in marketing. Gallouj (2000, p. 133) describes expertise-field innovation as ‘potential’ innovation for unclear reasons. He puts it into words as ‘innovation remains only potential, and will only be materialized in interaction with the client’. But that seems the case with every
innovation. Nevertheless, expertise-field innovation and service-stretching are clearly innovation from the Schumpeterian perspective, though among the service specific innovation concepts most difficult to classify as product or process innovation.

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Figure 1 about here

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We can conclude that the service (specific) innovation concepts reviewed here are an over-stretch of the Schumpeterian innovation notion, a refinement of the Schumpeterian innovation forms or an aspect of service innovations (both technological and non-technological). This conclusion is depicted in figure 1.

2.3. A synthesis

Since the output of the service innovation process is very heterogeneous and not necessarily just the application of new technology, we argue that it makes sense to distinguish between TAI s and NTAIs in service innovation research (see figure 2). This might be understood as a plea for the demarcation approach, but that is not the case. For example Archibugi et al. (1994) have suggested a distinction between different types of innovative activities in their evaluation of the European Community Innovation Survey (CIS) that bears a strong resemblance to our proposal. They propose a refinement of product and process innovation with special attention for ‘packaging’ and ‘design’. This is closely related to the ‘aesthetic’ aspects of service innovation proposed in figure 2. Deliberate changes in the styling or ergonomics of a service setting -an office, a service shop, a service desk or a service vehicle- create a new atmosphere with impact on
employee behavior and the service experience of customers (Bitner, 1992). The relevance of the aesthetic aspects is implicitly supported by Sundbo and Gallouj (2000, p.45) who emphasize: ‘The customer’s satisfaction with the total encounter –not only the core service delivered, but also the circumstances of the delivery- has been crucial in service production’. The second aspect from figure 2 to discuss is ‘linguistics’. Since services are intangible, the careful choice of new service marks and marketing expressions in innovation processes is crucial. Linguistics has to contribute to ‘making the intangible tangible’, both for the customers and the employees. Therefore and for identification reasons linguistic aspects of innovation deserve special attention in innovation research, especially on the micro-level. The legal aspects proposed in figure 2 refer to new opportunities for the measurement of service innovation, discussed in the final paragraph of this paper.

Following Drejer (2004, p.560) we agree that ‘applying Schumpeter’s scheme of innovation in a more strict sense in services, could contribute to strengthening the theoretical and conceptual foundation for studying service innovation’. But that implies that we have to improve the methods for identifying product and process innovation in service firms first. This is claimed to be problematic due to the co-terminality between production and consumption, which characterizes most service activities. Sundbo (2000) argues that because the production process and the product are more integrated in both time and function than in manufacturing, innovations in services are often more
integrated. ‘Each single innovation often includes process, organization, market and product innovation’ (Sundbo, p.112). However, this seems a case of mingling aspects and types of innovation. Larsen (2001) argues that it is not surprising that product and process innovations in services are at the same level in the SIC research project (Sundbo, 1999) and Evangelista (2000) shows that around one fourth of the innovating Italian service firms is not able to distinguish between product and process innovation. In addition, we are not informed well about the ability of the other respondents to judge and classify novelty in their service firms in the right way. The validity of subordinate innovation studies in the service sector like the CIS seems a relevant issue. As a first step towards testing the validity of CIS like surveys with respect to the service sector, we propose to concern service innovation as a special case of service development. This proposal is supported by Sundbo and Fuglsang (2004, p.3), who define innovation as ‘the successful introduction and development of new products or processes that can be clearly isolated and identified and which have a certain degree of radicalism and novelty’. They proceed with ‘the innovation process should be identifiable as a process per se, it should have the character of a specific, novelty-oriented project’. Sundbo and Fuglsang (2004) argue that ‘development’ is more characteristic for the growth and success of modern organizations than ‘innovation’. We agree on this, but doubt whether respondents of CIS like surveys are able to distinguish between development and innovation. Therefore it seems meaningful to study service development in depth and explore ‘special case criteria’ for service innovation. These criteria can be used to test and improve the validity of subordinate innovation studies in the service sector.
3. Service innovation as a special case of service development.

Service development can be regarded as the development of the delivered services by a firm over time, i.e. as the differences between (a) recently delivered service(s) and services delivered at an earlier moment in time. Formally services develop ‘only’ in interaction with customers, because of their intangible nature. They can not be stored and developed in special departments, though the contours and sometimes the ‘architecture’ – a (process) design of the intended interaction with the customer- and the physical setting of new services can be shaped in advance (Shostack, 1984). So, services can be developed at the conceptual level in advance (Vermeulen, 2004). In the case of new services this is labeled as NSD in the literature (see for example Dolsfsma, 2004). The advantage of the service development abstraction is that it includes both the development of something new and the let go of useless things. The innovation notion seems confined to the introduction or adoption of something new, though Schumpeter (1942) links innovation closely to the destruction of old ways of doing things. Studying service development requires first of all defining services in a meaningful way. Service delivery is regarded widely as a transformation process (Gadrey et al., 1994; Miles et al., 2002). It is ‘the transformation of some reality C (artefacts, people, information, knowledge), 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 mode of the transformation process is determined strongly by the perceived reality-request set and the service intentions, resources, competencies and capabilities of the provider A, though the request frequently changes during the interaction between
customer and service supplier. Exploring the request is part of many services provider (Mills and Margulies, 1980). The transformation view on service delivery is very useful, though it is a strong simplification of practice. First, many reality-request sets are ambiguous and have a different meaning for (representatives of) the customer and (representatives of) the service. Second, the provider A is in fact a system of resources, competences and capabilities transforming the reality C possessed by customer B. In the most simple case the system equals one service-employee, but in other cases it is a team of service-employees and other resources that transform the reality C owned by B. In the latter case the reality-request set can be regarded as a social construction (Weick, 1995). Third, in many cases, for example in knowledge intensive business services (KIBS), it is not clear who is the customer: the one who pays the invoices?, the one who takes the decisions, i.e. the CEO?, the project manager?. Fourth, cooperation with B is very frequent cooperation with a team of representatives from B’s organization and in some cases even cooperation with representatives of other service firms as well. The result of the service delivery is in these cases the output of a complex interactive process with different actors. Fifth, in many cases the actual transformation evolves over time, with both a short term and a long-term effect. Gadrey et al. (1994) describe the actual service delivery in a single customer case. For reasons of the dispute on development and innovation in services and the heterogeneity of customer needs, it is meaningful to ‘sum’ recently passed transformations and cluster both the transformed realities (possessed by consumers) and the outcomes of the transformation process (see figure 3).
Through the model in figure 3, three meaningful levels of service analysis emerge:

- the single service level;
- the service line level;
- the service portfolio level.

A single service is the delivery of a service in a single customer case, i.e. service delivery to customer X or Y. A service line is defined here as ‘a linguistically and financially specialized set of service activities and service intentions fulfilling a specific market need’ and a service portfolio as ‘the set of distinguished service lines on the firm level’. Linguistic specialization of a set of service activities and service intentions is ‘rewarding’ their special features with an own label. It is justified from at least the managerial and marketing perspective and in many cases from the production perspective as well, i.e. the services have to be managed, marketed or produced in a strongly different way. Financial specialization of a set of (new) service activities and intentions implies accounting and monitoring their financials, at least revenue and preferably costs as well. It is not necessary about different pricing, rather about financial accounting. It is most relevant to study the development of services on the firm level, i.e. on the portfolio level or on the service line level. Analysis of case to case differences implies the risk of reductionism. Both in the case of a service line and a service portfolio, service development is a consequence of:

- innovation (as a process);
➢ the heterogeneity of customer requests and realities;
➢ learning and unlearning;
➢ the absorption of new resources and competencies or its separation;
➢ institutional, social or sectoral change.

Service development on the portfolio and service line level can be described as ‘organic and discontinuous changes (transposition, enlargement, and shrink) in the transformation space embodied by recent service activities, caused by innovation, heterogeneity, (un)learning, absorption and separation of resources and competencies and finally by institutional, social or sectoral change’. Innovation will be discussed in the next paragraph; other drivers of service development are discussed here. A discussion about the consequences of heterogeneity is left away, since it seems too trivial.

3.1 Learning and unlearning

In service firms learning takes place both ‘on’ and ‘off’ the service job and both individually and collectively, i.e. on the employee, team and firm level (Spender, 1996; Flikkema et al., 2003). The result of learning processes is knowledge, both tacit and explicit (Polanyi, 1958) and both individual and organizational (Cook and Brown, 1999). Changes in organizational knowledge result in changing joint behavior (practices and processes) and changes in for example Intellectual Property Rights (IPR) and methodologies, i.e. changes in objectified, explicit knowledge (Spender, 1996). Service jobs are important loci of knowledge creation and absorption, especially in the case of KIBS whose services are not that predefined in advance. The uniqueness of a customer request, given its reality, triggers many of these service firms to sing another tune. Project
teams form the dominant learning context. Learning in this context takes place through social interaction—both formally and informally—between co-workers, supervisors, customers and sometimes even competitors (Flikkema et al., 2003; Fosstenlökken, et al., 2003; Sivula et al., 2001). It can be described by the ‘socialization’ mode in the transformation model of Nonaka and Takeuchi (1995). Unlearning is a relevant notion with respect to service development as well. We have anecdotal evidence that for example the results of training flow back after some time. Service employees return to old behavior. One could denominate it as a kind of ‘knowledge erosion’.

Learning, knowledge and innovation are interrelated notions. But is knowledge creation a prerequisite for (service) innovation? And what about codification? Drejer (2004) and Leiponen (2003) do not agree on the codification issue. Leiponen argues that innovation does not necessarily require codification to occur though it may make organizational learning more efficient. Drejer (2004) emphasizes that it is an implication of Nonaka’s (1994) theory of knowledge creation that codification is a prerequisite for innovation. Nonaka and Takeuchi (1995) argue that new knowledge emerges out of the interaction between tacit and explicit knowledge. So making knowledge explicit seems to be a necessary step towards creating knowledge that according to Nonaka and Takeuchi (1995) fuels innovation. Indeed it fuels innovation, but first of all innovation is not mere running on new knowledge (see figure 2) and second new knowledge can be absorbed by a firm as well. In these cases, knowledge creation is in fact contracted out to other actors.

3.2 The absorption or separation of resources and competencies

Besides innovation and learning, service development is also a consequence of the
absorption and separation of resources (especially knowledge) and competencies. The best way to illustrate this is by an example: the recruitment of an experienced consultant has consequences for the service delivery. He or she brings in deviating knowledge, methods and approaches which ‘compete’ with those of his new colleagues. Knowledge absorption is –in the case of people being the knowledge carrier- the absorption of both codified and tacit knowledge. Because tacit knowledge can not be expressed, its impact on service development can not be predicted in advance. When employees leave the service firm, this has consequences as well. It can be regarded as the separation of resources and competencies that might even harm organizational capabilities, especially in the case of small and medium sized enterprises (SMEs).

3.3 Institutional, social or sectoral change

Some service sectors and firms are influenced strongly by changing professional ethics, prescriptions or topics agreed on in sector organizations. This applies certainly for health services, law firms, notary offices, fiscal services and accountants. Sundbo and Gallouj (2000) describe this as the influence of ‘service professional trajectories’ on service development. Other service sectors are less organized but nevertheless, the institutional and social environment governs the behavior of all service firms. Institutional changes or trajectories (Sundbo and Gallouj, 2000), i.e. changes in the fundamental political, social and legal ground rules that govern economic and political activity (Bromley, 1989), have impact on both the actual service delivery and the service conditions. It may even trigger service innovation, for example in service firms that live on legal knowledge.
In this paragraph we have shown that service development is a consequence of at least five phenomena. Service innovation is carried up as one of them. Therefore, service innovation (as a product) can be regarded as a special case of service development. Service development can be studied on both the service line and portfolio level. In the next paragraph we will use these levels of service analysis for elaborating a service equivalent of the Schumpeterian innovation forms and deduce special case criteria for product and process innovation in service firms.

4. A service equivalent for the Schumpeterian innovation forms

In the *Theory of Economic Development* (1934) Schumpeter distinguishes five forms of innovation:

i) product innovation: introduction of a new good or a new quality of a good in the market;

ii) process innovation: introduction of a new production method, including a new way of handling a commodity commercially;

iii) organizational innovation: carrying out of a new organization of industry;

iv) market innovation: opening of a new market;

v) input innovation: conquest of a new source of raw materials or semi-finished products.

In the first instance the Schumpeterian innovation forms seem self-explanatory. However, as Simonetti et al. (1995) show, the definition of product and process innovation is neither self-explanatory nor straightforward. They distinguish four different definitions of product and process innovation and show that the majority of innovations fall in 'the grey
zone’. This indicates that innovations can be classified as product or process innovation, dependent on the chosen definition. In addition, the forms of innovation distinguished by Schumpeter are very manufacturing oriented, especially in the case of product and process innovation. For reasons of the co-terminality between the production and consumption of services, the Schumpeterian innovation forms seem less useful for the service sector in the first instance. However, we argue that shifting the level of analysis from the single service level to the service line and service portfolio level, reduces the co-terminality problem. By using these constructs and applying the ‘firm level approach’ distinguished by Simonetti et al. (1995), we have developed a service equivalent for product and process innovation from the Schumpeterian perspective. In the firm level approach, managers of the innovating firm classify the innovation (Simonetti et al., 1995). Strictly, the results of this approach tell us nothing about innovation on the macro level when the innovation notion is confined to ‘technological change’. However when the innovation notion is broadened to encompass non-technological change as well or when firms form the objects of research interest, it seems an appropriate approach for classifying service innovations.

4.1 Introduction of a new service

The introduction of a new service in the Schumpeterian sense can be regarded as the deliberate introduction (in fact the offering or marketing) of the contours of a new service line. ‘New to the firm’, though Schumpeter would most likely label some of these innovations as ‘imitation’. The deliberateness of the introduction refers to a management decision, since management seems primarily interested in economic growth, the intention
behind innovation according to Schumpeter. It is about the introduction of the contours of new services, because services can not be stored and actually start to develop when the first client is served in the intended new way. In some service sectors, especially in the efficiency-driven sectors like financial services, the contours of new services are demarcated very sharply. Processes are specified very detailed as well as the supporting information technology, i.e. the degrees of freedom with respect to customer heterogeneity are small. The contours of new service lines in KIBS are in the ‘design stage’ often very vague. Only a few principles and approaches are agreed on and explicated in a business plan and flyers or web-sites are designed for marketing purposes. The rest is shaped ‘on the service job’, i.e. the development starts in these cases in fact with the writing of the first service proposal, which can be interpreted as a sharpening of the service contours.

One can discuss whether ‘innovation’ is the right label for the ‘design stage’ (Shostack, 1984) and its output. We think it is not, the innovation label is only justified when new services are sold ultimately to at least one customer. Moreover, according to Schumpeter (1934) ‘reproducibility’ is one of the demands to be made to innovations. In fact, in the design stage nothing has been produced, only the contours of a new service have emerged. However, one could also argue that for heterogeneity reasons it is practically impossible to reproduce a new service anyway.

Another point to discuss besides the role of the service firm’s management has been introduced by Sundbo and Fuglsang (2004, p.3). They argue that innovation could be defined as ‘the successful introduction and development of new products or processes that can be clearly isolated and identified and which have a certain degree of radicalism
and novelty’. They proceed with ‘the innovation process should be identifiable as a process per se, it should have the character of a specific, novelty oriented project’. This makes sense, though it is not clear what they mean with ‘successful’ and we hesitate whether service innovation requires a project-based organization per se. We prefer ‘initiative’ to ‘project’. This means that product innovation in service firms can be meaningful defined as:

i) the output of a novelty oriented initiative, deliberately decided on by the service firm’s management;

ii) a linguistically and financially specialized set of intended new service activities sold ultimately to at least one customer.

And that product innovation in a service setting is (as in manufacturing):

iii) driven by desired economic growth;

iv) about the fulfillment of strongly deviating customer needs.

Item i) implies significant investments in resources and the development of competencies and capabilities. In addition it distinguishes service innovation from ‘customizing services’ which is part of the service job, the inevitable ‘learning on the service job’ and the ‘application of unaware absorbed knowledge’ (caused by for example the recruiting of a new employee). Item ii) makes clear that deliberate organizational change (also novelty-oriented initiatives) and service innovation are not synonyms. Service innovation can be concerned as a subset of deliberate organizational change. Moreover item ii) distinguishes product innovation from process innovation (through the financial specialization requirement) and market innovation (through the novelty requirement), it
excludes re-branding initiatives\textsuperscript{2} (through the novelty requirement) and finally it represents the point introduced by Sundbo and Fuglsang (2004) that service innovations have to be identifiable (through the linguistic specialization requirement). A positive spin off of using the ‘financial specialization’ criterion for product innovation in service firms is the improved trace-ability of service innovations. With that, it gets possible to trace the business success (or failure) of new service lines.

The use of new service marks, labels or brands seems to fulfill the identification need in service innovation research. However the relation between product innovation and the appearance of new marks, labels or brands is not reciprocal. Frequently the introduction of new labels is purely cosmetic. But here the novelty requirement helps. Item iii) is consistent with Schumpeters' economic growth theory which assumes that economic growth is the intention behind innovation. Item iv) is the operationalization of ‘new service activities’ and ‘strongly’ refers to the radicalism proposed by Sundbo and Fuglsang (2004).

\textit{Market innovation} in a service firm can be described meaningful as ‘the deliberate entry in a new market with existing or only slightly adjusted services and frequently but not necessary the introduction of a new service mark/label’. Market innovation implies mainly significant investments in marketing. The difference between product innovation and market innovation in a service firm is hard to describe in terms of a dichotomy, because it is difficult to describe the borders of ‘mainly significant investments in marketing’ and because not all product innovations contain the same level of newness. The difference is described better by a gradual pattern and the labeling will be a matter of

\begin{footnotesize}
\textsuperscript{2} Re-branding can be regarded as a process innovation, since it is about ‘a new way of handling a commodity commercially’.
\end{footnotesize}
taste anyway. Some people will label service novelty as a market innovation preferably, others as a product innovation. Meaningful grades have to be tested empirically.

4.2 Introduction of a new production method

The introduction of a new production method in a service setting can be regarded as ‘going live’ with the deliberate preparation of a more efficient or effective service delivery process (Gadrey et al., 1994) or as delivery innovation (Preissl, 2000). Improving efficiency is in many cases allowing less heterogeneity (the goal domain shrinks, the transformation space as well and the actual customer reality-request domain is re-framed to a smaller domain; customers accept this in exchange for lower prices). In other cases it is reorganizing the service process (including the reconsideration of the customer’s role) or supporting the service delivery by new ICT applications. ‘Effectivity’ is a broad term. It is not necessary about service quality. Therefore process innovation in services can be regarded as the result of deliberate investments in ‘bridging the gap’ between intentions of recent or future service deliveries within a certain service line and the actual performance, including the performance to be expected in future cases if the status quo is maintained. Process innovation is about attempts to reshape a service line, but what about the success? Only the result of the attempts matters, i.e. the result is the process innovation. For example the investment in an expert system can be regarded as a process innovation intended to reduce the number of mistakes made by service employees (for example in medical services). But what about the results of a project management training by business consultants? What is the attitude of the participants with respect to the training? Are they willing to learn? Did they actually learn? And is
this knowledge applied in (all) new customer cases? In some cases it will be very difficult to isolate and label the actual process innovation (as a product) meaningful. Identification will be more problematic in these cases compared to product innovations in a service setting. With this in mind, a process innovation in a service firm can be defined meaningful as:

i) the output of novelty oriented initiative, deliberately decided on by the service firm’s management;

ii) the result of attempts to bridge the gap between intentions of recent or future service deliveries\(^3\) within a certain service line and the actual performance, including the performance to be expected in future cases if the status quo is maintained;

iii) novelty applied in at least one customer case;

And process innovation in a service setting is (as in manufacturing);

iv) driven by desired economic growth.

Does this all mean that ‘innovation on the service job’ has no Schumpeterian meaning? No, though service innovation has to be associated strongly with ‘off the service job activities’, actual service delivery can act as an input to the innovation process. For example when a management team decides to support a service offering in moderate terms (lower tariffs), it might be a deliberate learning process that is part of an innovation process. But it might also be part of a sales strategy, in which a service firm tries to acquire ‘showcases or best practices’, to be used in future service-proposals. In the former case the opportunity costs of this learning stage should be discounted to the service innovation, in the latter case it is just an investment in market development.
5. Conclusions

In this paper we have explored service development for understanding Schumpeterian innovation in service firms and for tackling the identification problem. Service innovation is concerned as a special case of service development. In the Schumpeterian sense, service innovation can be regarded as the deliberate introduction of a new service line, abolishment of the status quo within an existing service line or the deliberate rearrangement of the service portfolio. ‘Deliberate’ means that the service firm’s management agrees on the development and introduction of the novelty. With this in mind notions like ‘emerging innovation’, ‘ad-hoc innovation’ and ‘project-linked innovation’ clearly strain the Schumpeterian innovation notion, though it is not correct to claim that ‘innovation on the service’ job has no Schumpeterian meaning at all. The empiric behavior described by the notions memorized here can be formulated better as ‘learning’, ‘customization’, ‘application of unaware absorbed knowledge’ or just as ‘service delivery’ (in cases in which knowledge creation is part of the service job). Beyond this, the distinction between product and process innovation seems more meaningful than the distinction between technological and organizational innovation in service firms and stretching Schumpeter’s original opinion on organizational innovation generates overlap with product and process innovation. It seems preferable to label the stretched Schumpeterian opinion as ‘deliberate organizational change’. Finally, linguistic changes on the service line level (in the case of re-branding) and service portfolio level are carried up as important identifiers of product innovation with good reason. Besides that, another five criteria for product, process and market innovation have been introduced to improve the comparability of (service) innovation research. The proposed

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3 Including the marketing and sales part of the delivery process.
attention for linguistic changes in service innovation research is the link to the use of new indicators of service innovation.

6. Suggestions for the measurement of service innovation and further research

In this paper we have proposed to pay attention to linguistic changes on the service line and service portfolio level in service innovation research. Therefore we agree with Schmoch (2003) and Mendonça et al. (2004) that new service marks and trademark registrations might be interesting indications of service innovation, especially in the case of product and market innovation, though opponents would stress that a trademark does not reveal technological inventiveness primarily but rather marketing creativity. But as we have argued, technological inventiveness is not a prerequisite for service innovation. According to the World Intellectual Property Organization (WIPO) a trademark is defined as a ‘distinctive sign which identifies certain goods or services as those produced or provided by a specific person or enterprise’ (WIPO, 2004). As in the case of patents, trademarks provide legal protection to the owner by granting the exclusive right to use it to identify goods or services, or to license its use to another in return for payment (Mendonça et al., 2004). The relevance of the identification argument has been discussed extensively in this paper. Trademarks have the same strength as patents: a reasonable unambiguous legal definition and being collected and classified by specialized institutions in accordance to international agreements, i.e. according to the NICE classification (Mendonça et al., 2004). Another suggestion based on the proposed attention for linguistic changes in service innovation research is to study the marketing efforts of service firms in depth. How do service firms market new service lines, market
and process innovation? It is interesting to test whether service innovations are announced in literature. When this can be confirmed, the use of LBIO (Literature Based Innovation Output) measures in innovation research is interesting as well (Coombs et al. 1996; Kleinknecht, 2000). A third suggestion is about novel registrations at the Chamber of Commerce. In some cases new service lines are specialized legally for reasons of risks. They are registered at the Chamber of Commerce (CC). But what about the propensity to trademark, to registrar product innovations at the Chamber of Commerce and to announce service innovations in literature? We know from patent research that many factors determine the patent registration propensity (see for example Arundel and Kabla, 1998, Brouwer and Kleinknecht, 1999). Does this apply in the case of trademarks, CC registrations and literature announcements as well? What about sector differences (if any), the perceived newness of the underlying products and services, perceived competition, the relative and absolute size of the marketing department (budgets) and what about the firm size? And what about the usefulness of trademark registrations, literature and the Chamber of Commerce databases? Is it necessary and possible to filter indications of service innovation from other registrations? How many registered trademarks of service firms imply service innovation and is this distributed uniformly over the service sector? These questions require extensive research on the service firm level. The potential of trademark registrations, LBIO measures and registrations in the Chamber of Commerce databases seems promising. However, only firm-level and case study research can confirm this.
We doubt whether it is meaningful to distinguish three approaches for studying innovation in manufacturing and services. The assimilation approach, the demarcation approach and the synthesis approach introduced by Coombs and Miles (2000) are not mutually exclusive. We should prefer a dichotomy (Djellal and Gallouj, 1999). Service innovation research has thrown light on neglected aspects of innovation, especially on the soft side of innovation (Den Hertog et al., 2004) and both in the meaning of innovation as a process and in the meaning of innovation as a product. Parts of these aspects however have been mentioned in research on innovation in the manufacturing as well (Archibugi et al., 1994). Therefore we would like to make a plea for distinguishing the assimilation and the demarcation approach only. Service innovation and innovation in manufacturing are the same or not. In addition it seems meaningful to distinguish innovation as a process (that ends with the introduction of something new in the market) from innovation as a product (the newness introduced in the market). The innovation process can be described as a function of recombining and absorbing resources & competencies and marketing with different accents and actors in manufacturing and services (but also within these sectors) or for example with help of NPD models. The product of innovation in services is something we are not very familiar with. It requires intensive case-study research to learn about the characteristics of service innovations. With that it will be more clear if a refinement of product and process innovation is justified from the aggregation perspective, i.e. is it legitimate to sum product and process innovations in service firms on the sector level and beyond?
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4 The Dutch Pension Fund for Metalworking and Mechanical Engineering.
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innovation survey in the Netherlands. Paper presented at the research workshop “Management of innovation – Are we looking at the right things?” Vedbaek (DK), June 7-9.


Figure 1. Classification of the reviewed service (specific) innovation concepts

<table>
<thead>
<tr>
<th>Service (specific) innovation concept</th>
<th>Activities that might lead to innovation</th>
<th>Refinement of the Schumpeterian innovation forms</th>
<th>Aspects of service innovation (TAI and NTAI)</th>
<th>Schumpeterian innovation forms that cover the service (specific) innovation concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ad-hoc innovation</td>
<td>x</td>
<td></td>
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<td></td>
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<tr>
<td>Formalization innovation</td>
<td>x</td>
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<tr>
<td>Radical, improvement and incremental innovation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Recombinative innovation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Expertise-field innovation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Service-stretching</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Customer as co-producer</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Multi-unit organization</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>External relationship innovation</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>Conceptual innovation</td>
<td>x</td>
<td></td>
<td></td>
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<tr>
<td>Delivery innovation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Client-interface innovation</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Technological options</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
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<tr>
<td>Business concept innovation</td>
<td>x</td>
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<td></td>
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<tr>
<td>Transaction innovation</td>
<td>x</td>
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</tbody>
</table>

Notes:
1. In this table the original Schumpeterian meaning (Schumpeter, 1934) of organizational innovation is used.
2. ‘Concept’ and ‘conceptual’ are very fuzzy constructs and therefore not classified in the left part of the table.
3. The focus here is on the service business, therefore, ‘business concept innovation’ seems a synonym for product innovation in a service setting.
Figure 2. Technological and non-technological *aspects* of service innovation

<table>
<thead>
<tr>
<th>Aspects of service innovation</th>
<th>TAI</th>
<th>NTAI</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technological</td>
<td></td>
<td>x</td>
<td>Introduction of Electronic Data Interchange (EDI), Document Management Systems, Data mining tools.</td>
</tr>
<tr>
<td>Organizational</td>
<td></td>
<td></td>
<td>Adoption of a multi-unit organization, consequences of process redesign.</td>
</tr>
<tr>
<td>Linguistic</td>
<td>x</td>
<td></td>
<td>Labeling of a new service line, marketing of a new distribution channel.</td>
</tr>
<tr>
<td>Aesthetic</td>
<td></td>
<td>x</td>
<td>Restyling of a service shop (for example in a travel agency).</td>
</tr>
<tr>
<td>Transactional</td>
<td>x</td>
<td></td>
<td>Introduction of new payment conditions (for example no cure, no pay in legal consultancy).</td>
</tr>
<tr>
<td>Legal</td>
<td></td>
<td>x</td>
<td>Trademark registration, Chamber of Commerce mutations</td>
</tr>
</tbody>
</table>
Figure 3. Description of a service line or service portfolio in algebraic input, throughput and output terms

\[
\text{realities, request sets} \rightarrow \text{transformation vectors} \rightarrow \text{transformed realities}
\]