

# Service Innovation

Fachhochschule  
Münster University of  
Applied Sciences



## Project Report

### An Evaluation of New Service Development Practice



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**Project Leader**

**Damian M. Leich, BBA, M.A.**



**Project Leader**

**Dipl.-Betriebsw. Sinan Gökdoğan, M.A.**



**Project Owner**

**Prof. Dr. Thomas Baaken**

# Preface

Sowohl die Dienstleistungsbranche, als auch die Entwicklung innovativer (Service-) Produkte, fungieren als Motor wirtschaftlichen Wachstums. Dies gilt in ganz besonderem Maße für Industrienationen. Durch einen Mangel an natürlichen Ressourcen, eine sich verschärfende Wettbewerbssituation, ein verändertes Kundenverhalten sowie ein hoch dynamischer und stetiger technologischer Wandel, nimmt die erfolgreiche Entwicklung und Markteinführung innovativer Produkte gerade in diesen Ländern an Bedeutung zu. Die Erfolgsfaktorenforschung im Themenfeld »Innovation« blickt dabei auf eine etablierte Forschungstradition zurück. Der Schwerpunkt vorheriger Studien lag allerdings fast ausschließlich auf der Bewertung herstellender Betriebe. Über Innovationsaktivitäten innerhalb des Dienstleistungssektors ist hingegen überraschend wenig bekannt. Wissenschaftlich ist es jedoch umstritten, ob Befunde aus der herkömmlichen Neuproduktentwicklung unmittelbar auf Dienstleistungen übertragbar sind. Die Fachhochschule Münster, das Science-to-Business Research Centre und der Bundesverband der mittelständischen Wirtschaft (BVMW) nahmen die Herausforderung an, dienstleistungsspezifische Erfolgsfaktoren empirisch zu untersuchen. Die im Sommer 2009 durchgeführte Studie betrachtet exemplarisch das Innovationsverhalten 114 deutscher Dienstleistungsunternehmen. Hierzu wurde unabhängig von Unternehmensgröße und Sektorzugehörigkeit zunächst eine Gesamtbetrachtung vorgenommen. Die Befragungsteilnehmer bewerteten Schritte des Innovationsprozesses und eingebundene Unternehmensressourcen hinsichtlich der Bedeutung und ihrer Anwendung in den Unternehmen. Durch eine Abweichungsanalyse konnten maßgebliche Verbesserungspotentiale im Innovationsverhalten aufgedeckt werden. In einem nächsten Schritt wurden durch den Einsatz einer Cluster-Analyse drei verschiedene

Innovationstypen identifiziert. Diese Typen unterscheiden sich deutlich in ihrer Einstellung gegenüber Innovation. Es wurde festgestellt, dass die Sektorzugehörigkeit kaum Rückschlüsse auf das Innovationsverhalten zulässt. Vielmehr existieren verschiedene Innovationstypen in unterschiedlichen Sektoren. Eine weitere interessante Entdeckung dieser Studie hängt mit der Unternehmensleitung zusammen. Das Innovationsverhalten könnte nach ersten Erkenntnissen durch die Tatsache beeinflusst werden, dass ein Unternehmen von dem/den Gesellschafter(n) geleitet wird oder durch ein (externes) Management. Neben der akademischen Fragestellung war ein weiteres Ziel dieser Studie, konkrete Handlungsempfehlungen für Unternehmen aus dem Dienstleistungssektor zu formulieren, wie sie ihren Innovationsprozess verbessern können.

Wir hoffen, mit der vorliegenden Kurzfassung der Studie ein breites Leserfeld in Praxis und Wissenschaft zu erreichen und hoffen im Sinne eines wissenschaftlichen Disputes auf Anregungen und Kritik.



Münster im März 2010  
Prof. Dr. Thomas Baaken

Im Sommer des Jahres 2009 wurde ich gebeten an der o.g. Studie zum Thema Innovationsmanagement teilzunehmen. Zu diesem Zeitpunkt hatte ich gerade mein im Jahr 2000 gegründetes Dienstleistungsunternehmen, das sich schwerpunktmäßig mit dem Thema e-Commerce und Postlogistik befasst hatte an eine Aktiengesellschaft übergeben.

Gegründet wurde Pegasus, so hieß das Unternehmen bis Ende 2008 von mir als geschäftsführender Gesellschafter mit drei Mitarbeitern. Zur Zeit der Studie waren bereits über einhundert neue Arbeitsplätze entstanden.

Der Erfolg der Unternehmensentwicklung basierte in erster Linie auf folgenden Faktoren:

- Zum einen habe ich versucht, einer These folgend, eine konsequente Wirtschaftsethik beim Aufbau von Pegasus zu verfolgen, die kurz zusammengefasst das Wohl aller an den Geschäftsprozessen Beteiligten im Fokus hat. Demnach wurde den Eigeninteressen, als auch denen der Kunden, Lieferanten und Mitarbeitern die gleiche Wertschätzung entgegen gebracht und strategische Vorteile wurden nicht auf Kosten anderer Beteiligten ausgenutzt.

- Zum anderen hat sich das Unternehmen in einem Umfeld entwickelt, das in großem Maße von der Innovationsfähigkeit bestimmt wird. Es galt die sich schnell verändernden Wünsche der Kunden rechtzeitig zu erkennen, zu analysieren und neue Lösungsansätze anzubieten. Neben einer ständigen Anpassung von Strukturen und Abläufen im eigenen Unternehmen und in dem des Kunden waren auch umfangreiche technische Entwicklungen von unserer Seite erforderlich. Flexibilität und ständige Anpassungsbereitschaft aller Mitarbeiter waren demnach die Voraussetzung für den Erfolg.

In den ersten Jahren bis 2008 konnte so vollständig auf eine Marketing- und Vertriebsabteilung verzichtet werden, da wir von der Dynamik eines Nachfragewachstums profitierten. Als ich 2008 die Mehrheit an eine Niederländische Aktiengesellschaft verkauft hatte und somit der Wechsel von einem Inhaber geführten zu

einem Management geführten Unternehmen begann, fand ein signifikanter Wandel in der Innovationsfähigkeit statt. Schnelle Entscheidungen aus der Kenntnis der Kundenwünsche und eigenen Potentiale wichen immer mehr konzernspezifischen Leitlinien, welche die Wandlungs- und damit die Entwicklungsfähigkeit deutlich einschränkten. Im Umfeld der Wirtschaftskrise, die bis heute, also Ende 2009 an dem Unternehmen spurlos vorübergegangen ist, sank die kalkulierbare Risikobereitschaft der Konzernleitung rapide, was eine zusätzliche Innovationsbremse zur Folge hatte. Zur Zeit dieser Studie verfügte ich demnach bereits über die Erfahrung in einem Inhaber geführten Unternehmen und der unterschiedlichen Strategieentwicklung in einem Management geführten Unternehmen. Die Ergebnisse dieser Studie scheinen wichtige Hinweise darauf zu geben, dass meine persönliche Erfahrung zumindest keinen Einzelfall darstellt. Insofern können wertvolle Schlüsse aus dieser vorliegenden Arbeit gezogen werden, die den engen Zusammenhang von Innovationsfähigkeit und Erfolg eines Unternehmens beleuchten. Nicht zuletzt bin ich der festen Überzeugung, dass eine Strategie, die das Wohl des Kunden konsequent verfolgt und Lösungsangebote machen kann eine eigendynamische Innovationskraft entwickeln und pflegen muss.

Dies erfordert den Respekt vor den Bedürfnissen der Mitarbeiter und Lieferanten ebenso wie die eigenen Bedürfnisse des Unternehmens. Wenn demnach die Motivation, ein sinnvolles nachgefragtes Produkt zu realisieren, höher steht als die Gewinnmaximierung, wird der wirtschaftliche Erfolg nahezu einem Naturgesetz folgend ebenfalls eintreten. Gemäß einem Zitat von Robert Bosch:

Wer aufhört, besser zu werden, hat aufgehört, gut zu sein!



Efringen-Kirchen im Dezember 2009  
Peter Buckmann

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### //List of abbreviations

ATM	Automated teller machine
B2C	Business-to-customer
B2B	Business-to-business
BMBF	Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung)
BVMW	German Association for Small and Medium-sized Businesses (Bundesverband mittelständische Wirtschaft)
CIS	Community Innovation Survey
EIS	European Innovation Scoreboard
KIBS	Knowledge-intensive business services
NSD	New service development
OECD	Organisation for Economic Co-operation and Development
R&D	Research & Development
SMART	Specific, measurable, achievable, realistic, timely
SMEs	Small- and medium-sized enterprises
SWOT	Analysis of strength, weaknesses, opportunities and threats
ZEW	Centre for European Economic Research (Zentrum für Europäische Wirtschaftsforschung)

# CHAPTER 1: Introduction and problem statement

This project report investigates the results of a national survey carried out among German service firms. Primary data was gathered by means of an empirical study based on a structured questionnaire. The main objective of this study was to evaluate innovation practices in the service sector and to provide a better understanding of the status quo of innovation activities.

The report is structured as follows. This first chapter introduces the research topic (1.1), presents the problem statement (1.2) and defines key terms and concepts (1.3). Chapter 2 continues with a brief discussion of relevant literature investigating innovation practice (2.1) and charts gaps in current literature (2.3). Furthermore, the theoretical framework applied in this study (2.4) as

well as a typology which facilitates the classification of services will be discussed (2.5). Chapter 3 commences with the procedure (3.1) and scope (3.2) of the empirical study. Afterwards, the questionnaire design (3.3) and sample applied (3.4) is outlined in great detail. In chapter 4 the main findings of the empirical research are presented. First, the results regarding the whole sample are provided (4.1). Second the findings from the cluster analysis conducted are depicted (4.2). The last chapter summarizes and captures the most important findings of this study (5.1). Finally, a set of recommendations is provided to the management of service companies in order to enhance the efficiency of their innovation process and academics in terms of further research required (5.2).

Figure 1.1 Division of chapters



## 1.1 Introduction

The service sector is becoming increasingly important as a key driver of economic growth (Spohrer & Maglio, 2008:238; Meffert & Bruhn, 2009:3).<sup>1</sup> In fact, in advanced economies services account for about two-thirds of employment (de Vries, 2004:4; Hauknes, 1998:1, Djellal & Gallouj, 1999:218) and gross value added respectively (Hipp et al., 2000:418). According to the International Labour Organization (2007; Spohrer & Maglio, 2008:239), in the year 2006, for the first time in history, more people were employed in the service sector than in either the agricultural or the manufacturing sector. Even economies with a strong focus on manufacturing are shifting to service dominated societies (Hipp et al. 2000:418; Meffert & Bruhn, 2009:457). In Germany for example, the share of gross value added by services rose above the share of gross value added by the manufacturing industry in the mid-1990s (Meffert & Bruhn, 2009:9). This means that the service sector in Germany nowadays accounts for 69.8% of gross value added compared to 29.4% by the manufacturing industry in total (OECD, 2008).

Another significant source of economic growth represents innovation (Maravelakis et al., 2006:283; de Vries, 2004:4).<sup>2</sup> For most industries, developing and introducing new products became the most important method to enhancing competitiveness (Jiménez-Zarco et al., 2006:265; Schilling & Hill, 1998:67). This has also been exacerbated by globalization, as companies in industrialized countries face increased pressure to innovate in order to overcome saturated markets and better resist increasing competition and cost pressure (Herstatt et al., 2007:1; Miles, 2007:259).

The recognized importance of innovation to the economy, policy and society (Thom, 1980:3; Vahs & Burmester, 2005:2) has led to inter-disciplinary research in this field. Scholars from applied sciences, political sciences, social sciences and economic sciences (Hauschildt & Salomo,

2007:35) have investigated the nature of innovation for decades. However, research in the field of innovation traditionally focused on the aspect of technological innovation. Therefore, the body of knowledge is dominated by research on the manufacturing industry (de Vries, 2004:4; Tether, 2005:154; Spohrer & Maglio, 2008:241).<sup>3</sup> This is the main reason why service firms were expected to be supplier-dominated (Tether, 2005:154; Droege et al., 2009:132; Pavitt, 1984) and therefore considered barely innovative for a long time (Camacho & Rodríguez, 2008:469; Tether, 2005:154). However, recent studies (e.g. Tether, 2005:182; Miles, 2008:126) indicate that many service firms and service industries are in fact highly innovative.

## 1.2 Problem statement

Comparatively little is known about innovation patterns in the service sector (Dolfsma, 2004:319; Hipp et al., 2000:418; Tether, 2005:154).<sup>4</sup> Scholars are calling for a wider range of research in service innovation and new service development (Spohrer & Maglio, 2008:241; Rust, 2004; Jiménez-Zarco et al., 2006:275). The urgent need for a better understanding of innovation in the service sector arose for several reasons. First, a worldwide shift from traditionally product-focused towards service-dominated societies took place (Meffert & Bruhn, 2009:457; Spohrer & Maglio, 2008:239). Even in economies with a strong focus on manufacturing, such as Germany, this trend can be identified (Hipp et al. 2000:418).

Second, service innovation emerged as a significant factor at a micro-level. Even for most manufacturing firms, services build a sustainable source of competitive advantage (Dolfsma, 2004:320; Kandampully, 2002:20) and revenues (Spohrer & Maglio, 2008:238).

Third, an increasing number of scholars claim that traditional concepts developed for manufacturing organizations cannot be transferred directly to services. This is

<sup>1</sup> Also see: Dolfsma, 2004:319; Camacho & Rodríguez, 2008:469; Tether, 2005:153.

<sup>2</sup> Also see: Hauknes, 1998:20; Tether, 2005:154; Schumpeter, 1950:134.

<sup>3</sup> Also see: Jiménez-Zarco et al., 2006:265; Camacho & Rodríguez, 2008:459; de Jong & Vermeulen, 2003:846.

<sup>4</sup> Also see: ; Jiménez-Zarco et al., 2006:265; de Jong & Vermeulen, 2003:846; Droege et al., 2009:131.



because service firms usually do not organize innovation activities in conventional R&D departments like manufacturing firms (Miles, 2007:260). They innovate differently (Camacho & Rodríguez, 2008:469; Jiménez-Zarco et al., 2006:266), such as implementing innovation in projects and on-the-job (Miles, 2008:115). Therefore, measurement tools and definitions applied to evaluate innovation activities in the manufacturing sector may not be appropriate for the service sector (Dolfsma, 2004:319; Camacho & Rodríguez, 2008:460).

Our study focused on several research gaps that had not been covered at all, or merely insufficiently, by prior investigations. We contributed new knowledge to this field of innovation study in the following way. First, we provided a better understanding of the status quo of innovation activities in the service sector using the example of German service firms. Second, we identified prominent gaps between current innovation patterns and best practice. Third, we discovered different types of innovators and room for improvement for each type. Fourth, we provided recommendations to the management of service firms in order to improve innovation performance. Sixth, we discovered possible topics for further research such as a potential correlation between management organization and innovation orientation. Seventh, we tested and verified the integrated conceptual framework of Froehle and Roth (2007).

### 1.3 Definition of terms

#### 1.3.1 Services

The literature provides a huge variety of definitions for 'services'. While some definitions highlight services as an activity or performance in order to solve a specific issue of the customer (e.g. Grönroos, 1990; Kotler, 1994), others describe services as a bundle of competences that have to be delivered to reach customer satisfaction (e.g. Gadrey et al., 1995; DISR, 1999). We have chosen Grönroos' (1990) definition of services, which seems to suit the purpose of our research best. This is because the definition includes three major elements of services; namely 'activities', 'interaction' and 'solution to customer problems'. The definition therefore is applicable to the whole service industry. Grönroos (1990) defines services as follows:

>> “an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interactions between the customer and service employees, and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to customer problems” (Grönroos, 1990).

#### 1.3.2 Differences between services and products

The definition of 'services' by Grönroos (1990) mentioned above includes some specific characteristics of services that differentiate them from traditional 'products'. These characteristics create certain barriers on the way of developing new offerings (Dolfsma, 2004: 320). For instance, a recurring theme in literature is that the development of a service product is different from the development of a tangible (i.e. manufactured) product (e.g. Johnes & Storey, 1998; de Jong & Vermeulen, 2003; Dolfsma, 2004). Therefore, it is useful to have a closer look at the characteristics of services. The characteristics of services that are most commonly cited across the literature are: 'intangibility', 'heterogeneity', 'inseparability' and 'perishability' (de Jong & Vermeulen, 2003; Vermeulen & van der Aa, 2003:37; Akmavi, 2005:360). Based on these aspects, the following Table (1.1) briefly summarizes the main differences between services and products.

**Intangibility:** Many scholars assert that services are of an intangible nature (Johnes & Storey, 1998; Vermeulen & van der Aa, 2003; de Jong et al., 2003).<sup>5</sup> This means that services consist of ideas and experiences rather than physical artifacts. Consequently, this attribute implies that service innovations are more difficult to protect against competitors. Furthermore, customers' evaluation is getting more complicated (Johnes and Storey 1998; de Jong et al., 2003).

**Simultaneity:** Products have to be produced before they are sold and consumed. In contrast, services are usually produced and consumed at the same time. The customer interaction becomes an essential part within the production process of services (e.g. Hipp et al., 2000; de Jong & Vermeulen, 2003; Dolfsma, 2004). This characteristic leads to the following two features.

**Heterogeneity:** The simultaneous production and consumption of services make the production cycle of services heterogeneous. Every service delivered is to some degree unique and strongly depends on the individual service worker and customer. Given these characteristics, an additional challenge in service innovation is to sustain and continually control the service quality (de Jong et al., 2003; de Jong & Vermeulen, 2003; Dolfsma, 2004).

**Perishable:** The integrated nature of production and consumption implies that services are also perishable. This means that they cannot be produced to be held in stock in order to sell them at a later date. Consequently, another challenging task for service providers is to coordinate supply and demand (de Jong et al., 2003; de Jong & Vermeulen, 2003; Dolfsma, 2004).

#### 1.3.3 Service innovation

The definition of innovation in service organizations is more difficult than it is for physical products (Berry et al. 2006). The majority of definitions distinguish between 'product' and 'process' innovation for both industries manufacturing and service (Tether et al. 2002). However, while the distinction between 'product' and 'process' is adequate for manufacturing, it is less helpful with services. This is because the distinction of innovation in services is more complex than a simple classification into 'product' and 'process' innovation (Camacho & Rodríguez, 2008:461). This is due to the simultaneous production and consumption of services, whereby the 'product' is commonly equal to the 'process' (Tether, 2005: 154). We primarily investigated the development of service 'products'. Therefore, we have used the following definition of service innovation:

>> “... the development of service products which are new to the supplier” (Johnes & Storey, 1998).

Table 1.1 Differences between services and products

Services tend to be ...	Products tend to be ...
• Intangible: ideas and experience	• Tangible: physical products
• Simultaneous production and consumption: customers participate in production	• Separation of production and consumption: customers normally do not participate in production
• Heterogeneous: individual and unique	• Homogeneous: usually standardized quality
• Perishable: cannot be kept in stock	• Can be kept in stock

Source: de Jong et al., 2003

<sup>5</sup> Also see: de Jong & Vermeulen, 2003; Dolfsma, 2004; Camacho & Rodríguez, 2005; Berry et al., 2006.

# CHAPTER 2: Relevant literature and theories

## 2.1 Research on service innovation

Innovation (Maravelakis et al., 2006:283; de Vries, 2004:4)<sup>1</sup> and the service sector (Spohrer & Maglio, 2008:238; Meffert & Bruhn, 2009:3)<sup>2</sup> are both key drivers of economic growth. Given this fact, surprisingly little is known about innovation in the service sector (Dolfsma, 2004:319; Hipp et al., 2000:418; Droege et al., 2009:131).<sup>3</sup> Research on service innovation and new service development is a comparatively new and emerging topic. Most of the knowledge of the innovation process at a micro-level derives from the manufacturing industry (Tether, 2005:154). Specific investigations of innovation activities in the service sector did not commence until the 1990s (Gallouj & Savona, 2009:153). However, researchers only pushed ahead with this type of research hesitantly. At the turn of the new millennium, however, investigation of innovation activities in the service sector began to increase rapidly (Schilling & Werr, 2009:8; Tether, 2005:182). This trend can be traced back to the success of information technology which stimulated innovation in the service sector (Miles, 2007:260) but more importantly to a general change of perspective within academia, which is explained in the following paragraphs.

Coombs and Miles (2000) group research contributions on service innovation into three categories: 'assimilation', 'demarcation' and 'synthesis' approach. This classification is widely adopted by other researchers (e.g. Tether 2005:154; Miles, 2005; Drejer, 2004; de Vries, 2004:4; Howells, 2006).

Followers of the 'assimilation approach', (mainly influenced by the work of Pavitt, 1984) presume that the service sector is 'supplier-dominated' in terms of its innovation activities (Den Hertog, 2000:499; Tether, 2005:155; Hanusch & Pyka, 2007:634). Service

companies are regarded as recipients of innovation and technologies developed by other industries (Hanusch & Pyka, 2007:634; Gallouj & Savona, 2009:155). As such, the innovative potential of the service sector and impact of service innovation on economic growth is assumed to be low (Hanusch & Pyka, 2007:634). Scholars following the 'assimilation approach' (also known as 'technologist approach') assume that innovation activities in services - in case there are any - are similar to manufacturing (Tether, 2005:154). They argue that insights from studies on innovation in the manufacturing industry can be translated directly to the service industry without any adaptation (Hanusch & Pyka, 2007:634; Droege et al., 2009:134; Gallouj & Savona, 2009:155).

The 'demarcation approach' (also 'service-oriented approach') is the opposite of the 'assimilation approach'. The basic assumption of the former is that services differ in nature and character from manufacturing (Hanusch & Pyka, 2007:635). Scholars following this approach claim that traditional measurements of innovation activities such as R&D staff and spending lead to an underestimation of innovation activities in the service sector. They also call for distinct theories specified to suit services (Hanusch & Pyka, 2007:635).

The third school of thought, called 'synthesis approach' (or 'integrative approach'), assumes that there is a convergence between services and tangible products (Gallouj & Savona, 2009:155). This means that tangible products gain importance in the service sector (particularly information technology), whereas intangible elements become an increasingly important component for manufactured goods (Miles, 2007:263; Dolfsma, 2004:320; Shelton, 2009:38). Therefore, scholars following the 'synthesis approach' theorize that innovation within service companies and manufacturers are not entirely different (Tether, 2005:156). In fact, the synthesis approach seeks to develop a conceptual framework which can be applied to both tangible and intangible products (Gallouj & Savona, 2009:155).

Scholars mainly applied the assimilation perspective in the beginning of service innovation research in

the 1990s. By now however, it seems to have gradually decreased in terms of significance and usage within academia. The demarcation perspective replaced the early attempts of technologists. Most investigations carried out at the moment, including our own contribution, follow this service-oriented approach. The synthesis approach is still at an emerging stage. Scholars started attempts to embrace both services and goods within one framework (Gallouj & Savona, 2009:155).

We agree with scholars calling for a shift towards a synthesis approach given the growing importance of services in the manufacturing industry as well as the general convergence between services and products (Gallouj & Savona, 2009:155; Miles, 2007:263). However, we decided in favor of a demarcation approach because we estimate that still not enough is known about innovation patterns in the service sector to 'synthesize' both perspectives (i.e. insights from 'assimilation' and 'demarcation' research) to one single perspective.

## 2.2 Research gaps

During the review of literature on service innovation and NSD we identified several research gaps which indicated significant reasons to conduct further research. These are the most important research gaps:

- (1) According to Hauschildt and Salomo (2007), politics, the economy and researchers still understand innovation as a predominant issue of industrial firms, whereas the service sector is barely taken into account. This study therefore provided deeper insights into innovation activities of the service sector.
- (2) Arising from point (1), most of the innovation surveys on services followed the 'assimilation approach' (Gallouj & Savona, 2009:160). This view does not differentiate between innovation in services and innovation in manufacturing. However, according to Tether et al. (2002), service innovations are highly

distinct from product innovation and thus require different instruments and concepts for separate investigations. In line with this view we followed the 'demarcation approach' and conducted a survey focusing on service companies only. We therefore created and adapted the questionnaire to the needs of this particular industry.

- (3) Most of the studies dealing with factors influencing innovation success used large companies as a sample (Dömötör et al., 2007; Hauschildt & Salomo, 2007:38). To contribute to another research gap, our sample, in contrast, included a large portion of small- and medium-sized enterprises (SMEs) operating within the service sector.
- (4) As a result of point (3), current literature (with some exceptions e.g. Hipp et al., 2000) does not elaborate differences in the service innovation process among firms of different sizes (Schilling & Werr, 2009). However, according to Schilling and Werr (2009), small, medium and large service firms might have different approaches toward organizing the innovation process. The authors pointed out that the firm size could represent another crucial variable that impacts the service innovation process. Due to a lack of comparative studies in this area further research is recommended to clarify whether the size of a firm, in fact, reveals distinctions in service innovation practice (Hipp et al. 2000; Schilling & Werr, 2009). This study met the challenge to shed more light on this debate.
- (5) During our literature review we found that the body of knowledge in service innovation and new service development is dominated by a focus on a few particular industries, namely financial services including insurances, telecommunication, transportation, information technology (Schilling & Werr, 2009:15) and

<sup>1</sup> Also see: Hauknes, 1998:20; Tether, 2005:154; Schumpeter, 1950:134.

<sup>2</sup> Also see: Dolfsma, 2004:319; Camacho & Rodríguez, 2008:469; Tether, 2005:153.

<sup>3</sup> Also see: Tether, 2005:154; Jiménez-Zarco et al., 2006:265; de Jong & Vermeulen, 2003:846.



wholesale (de Jong & Vermeulen, 2003:844).<sup>4</sup> Most of these studies investigated one particular industry only. Surveys including and comparing different industries are less frequent. According to several scholars (Dömötör et al., 2007; Schilling & Werr, 2009; Droege et al., 2009:146) studies comparing different kinds of industries are required in order to analyze differences in innovation practices. Given this lack in research we analyzed several industries in order to compare the differences in performance arising from industry belonging.

- (6) According to Droege et al. (2009) perspectives different to the traditional process-view - like for instance the resource perspective - are mostly under researched (for a description of both views refer to section 2.3). Froehle and Roth (2007) pointed out the necessity to integrate both process- and resource oriented views. For this reason, we have chosen the integrated perspective of Froehle and Roth's (2007) conceptual framework.
- (7) Critics claim that previous success factor studies lack relevance for practical usage. The actual relevance of the findings for practitioners is controversial (Nicolaï & Kieser 2002). Consequently, our study provides a structured questionnaire that can be used by service companies as a diagnostic benchmark tool for NSD activities. The questionnaire allows companies to evaluate the importance and actual implementation of factors reported to be important for their service innovation performance. In doing so, specific deficiencies (i.e. gaps between required and actually implemented innovation activities) of their current innovation performance can be identified. This information finally provides a basis to take further actions (i.e. improvement of prominent gaps) in order to enhance NSD excellence.

<sup>4</sup> For more comprehensive lists of studies refer to: de Jong & Vermeulen, 2003:847; Akamavi, 2005:361; Schilling & Werr, 2009:15.

Having addressed all of these research gaps our study aimed to contribute new knowledge to topics which have not been well investigated yet.

### 2.3 Conceptual framework

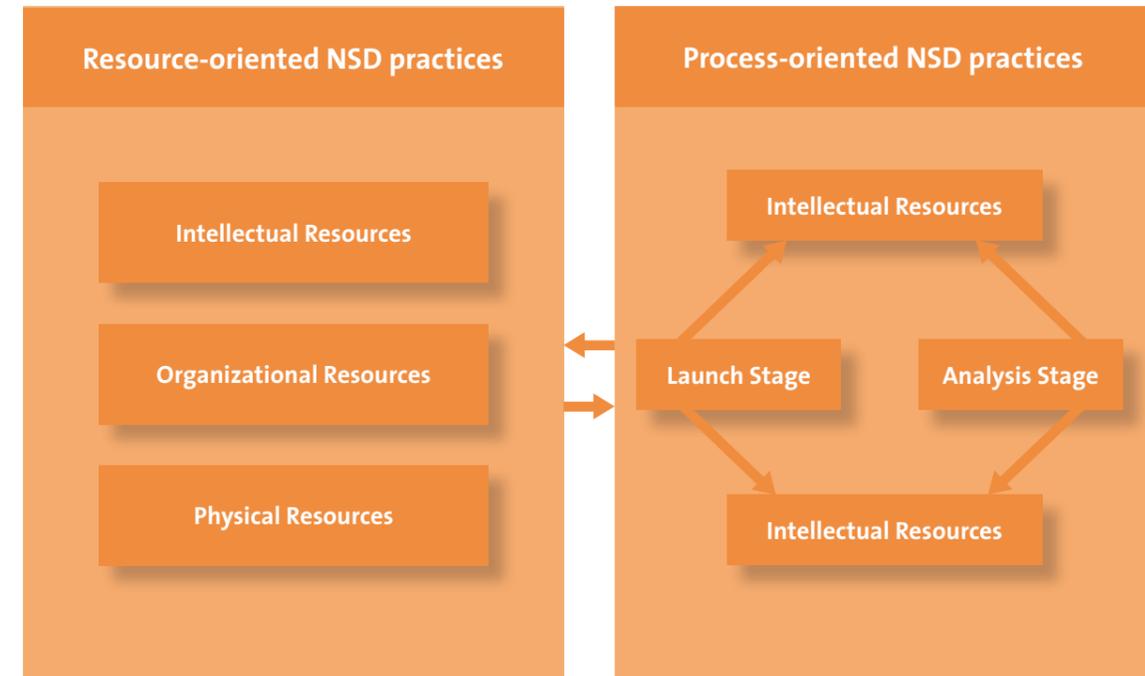
For our investigation, we used the conceptual framework of Froehle and Roth (2007), but made some refinements and adjustments to better suit the purposes of our research. The authors gathered antecedents of new service development which have been acknowledged by previous studies (Froehle & Roth, 2007:182). Their framework thus combines two different perspectives in one framework: the resource- and process-centric perspective. According to the authors' guiding belief, it is advantageous for companies to develop competences in both areas (Froehle & Roth, 2007:170).

Figure 2.1 indicates the two approaches that together build an integrated resource-process framework of new service development. Following a process oriented view, scholars split up the whole NSD-process into several stages (e.g. Donnelly et al., 1985; Bowers, 1986). For representing the process-centric perspective, Froehle and Roth (2007) sub-divide new service development practices according to the four-stage model defined by Johnson et al. (2000): 'design stage', 'analysis stage', 'development stage' and 'launch stage'. During the 'design stage', new service ideas are generated, evaluated and screened. The 'analysis stage' evaluates the viability of the concept selected. The 'development stage' includes steps to further develop a concept to a marketable product. Finally, the 'launch stage' deals with steps concerning market launch and commercialization of the new service (Froehle & Roth, 2007:174-175).

In contrast to the process-oriented view, a resource-centric perspective takes a firm's resources, competencies and capabilities into account (Barney & Arkan, 2001; Menor & Roth, 2008). For the purposes of sub-classifying, the resource-oriented new service development practices Froehle and Roth (2007) choose Barney's (1991) resource typology. The categories of this typology are 'intellectual



Figure 2.1 Resource-process framework of NSD



Source: Froehle & Roth (2007:170)

resources', 'organizational resources' and 'physical resources'. 'Intellectual resources' are strongly related to human resources. These resources refer to the experience, skills, knowledge and creativity of internal (employees) and external (e.g. partners, suppliers, customers, etc.) sources. The 'organizational resources' category contains the formal and informal organization, structure and sequence of the new service development process. 'Physical resources' are input factors required in order to realize the development project (Froehle & Roth, 2007:173-174). Compared to the process-centric perspective, the resource-centric view has been under-examined by empirical studies (Froehle & Roth, 2007).

The following two tables (Table 2.1 and Table 2.2) summarize all factors included, as well as the measurement items selected. We limited the operationalization of each construct to a single- or, in some cases, multi-item measurement scale. We did so in order to assure a

comprehensive survey on the one hand but to keep the questionnaire as short as possible on the other hand. Froehle & Roth (2007:181), however, argued in support of a multi-item measurement scale representing each factor.

Overall, we used the descriptions and definitions of factors provided by Froehle and Roth (2007) and translated them into measurement items. However, we made some refinements and modifications (for details refer to Appendix A).



**Table 2.1** Overview of process-related factors and measurement items

Subcategory	Factors	Measurement items
Process – Design Stage	Strategic definition	Define and (internally) communicate strategic goals
	Customer focus I	Define the target group – early focus on specific customer or market segment
	Customer focus II	Focus on meeting the needs of a specific customer or market segment during initial conceptualization of the new service
	Customer design input	Gather input from customers (before and/or during initial conceptualization)
	Alliance design input	Present an initial concept of new service to suppliers and partners in order to obtain early feedback
	Customer concept feedback	Obtain customer feedback on the initial new service concept
	Development motivation	Development of the concept is motivated by meeting real customer or business needs (versus just using the latest technology)
(cont'd)		
Process – Analysis Stage	Project authorization	Formally approve and authorize the development project by the management board
	Financial analysis I	Analyze the financial viability of the new service concept
	Financial analysis II	Analyze the economic viability of the concept (return on investment)
	Competitor analysis	Carry out a competitor analysis
	Market research	Carry out a market analysis
	Product line analysis	Analyze existing product line to identify synergies and conflicts with the new service concept
Process – Development Stage	Multilevel development	Core and supporting services are co-developed
	Customer interaction	Involve the customer in the development process
	Technology development	Identify conflicts between the new service concept and currently existing IT systems
	Pre-launch testing	Test and “debug” technical errors prior launch
	Process flowcharting	Carry out a “Service-Blueprint”
	Staff training	Extensively train front-line staff on how to support the new service
	Service fail-safing	Identify possible errors caused by employees
Market confirmation	Conduct a market test in order to confirm the new service product is marketable	
Process – Launch Stage	Formalized launch	Formally record launch activities intended (marketing plan)
	Internal promotion	Motivate front-line employees in supporting the new service
	Customer training	Train customers how to use newly introduced service
	Expectation setting	Establish realistic expectations in customers for the newly introduced service through appropriate marketing
	Formalized promotion	Carry out promotional activities (advertising; sales-promotion)
	Post-launch evaluation	Evaluate the new service after launch (review success / performance)

**Table 2.2** Overview of resource-related factors and measurement items

Subcategory	Factors	Measurement items
Resources – Intellectual	Employee design input	Ideas and suggestions for improvement flow into the development
	Diversity of internal sources	Ideas and know-how come from different divisions (e.g. marketing, IT, finance, etc.)
	External communication	External sources (e.g. partners, suppliers, customers, etc.) are used for new ideas and source of information
	Idea evaluation	A formal method of evaluating new service ideas exists
	Idea generation	Methods of generating new service ideas exist (e.g. suggestion system, creativity workshops, brainstorming)
Resources – Organizational	Employee motivation	Employees are motivated to help support the firm's new service development efforts
	Reward structure	An incentive system exists in order to motivate the team
	Managerial support	The management board is supporting the development project
	Cross-functional teams	The project team consists of employees from different departments (e.g. marketing, IT, finance, etc.)
	Team development	Activities exist in order to develop employees' ability to work efficiently within the team
	Internal communication	The functional areas or departments involved in the development communicate effectively with each other
	Lines of responsibility	Lines of responsibility and authority for the project are clearly defined
	Sufficient time	Employees do have the possibility to spend time on development project (beside day-to-day business)
	Development champion	A so called new service development „Champion“ exists
Resources – Physical	Sufficient funding	Appropriate funds are available to the project
	Sufficient human resources	An appropriate amount of qualified employees are available to the project
	Sufficient facilities	An appropriate amount of equipment (e.g. room, working materials, etc.) are available to the project
	Communication enablement	A communication channel exists in order to enhance (internal) communication among staff (e.g. intranet, blog, portal, etc.)
	External connectivity	A communication channel exists in order to enhance (external) communication with partners, suppliers, customers, etc.
	Back-office development	Back-office and administrative IT systems support the firm's new service development efforts



## 2.4 Classification of services

For the selection of industries as well as interpretation of data we applied the classification approach provided by Barth et al. (2000). In doing so, we were able to assure diversity in our sample and increase the overall validity of data collected (for a detailed list of reliability and validity criteria refer to Appendix C). In addition, the classification gave us a better understanding of the results and more room for interpretation. Figure 3.2 illustrates the four type service classification by Barth et al. (2000).

The two dimensions of the classification used are 'contact intensity' and 'variety'.<sup>5</sup> 'Contact intensity' illustrates the degree of interaction between the company's employees (i.e. actual human contact; excludes technology such as company's website, ATM, etc.) and customers. 'Variety' on the other hand focuses on the level of heterogeneity of services offered (i.e. degree of standardizations). Given these dimensions, services have been classified as follows (see Figure 2.2):

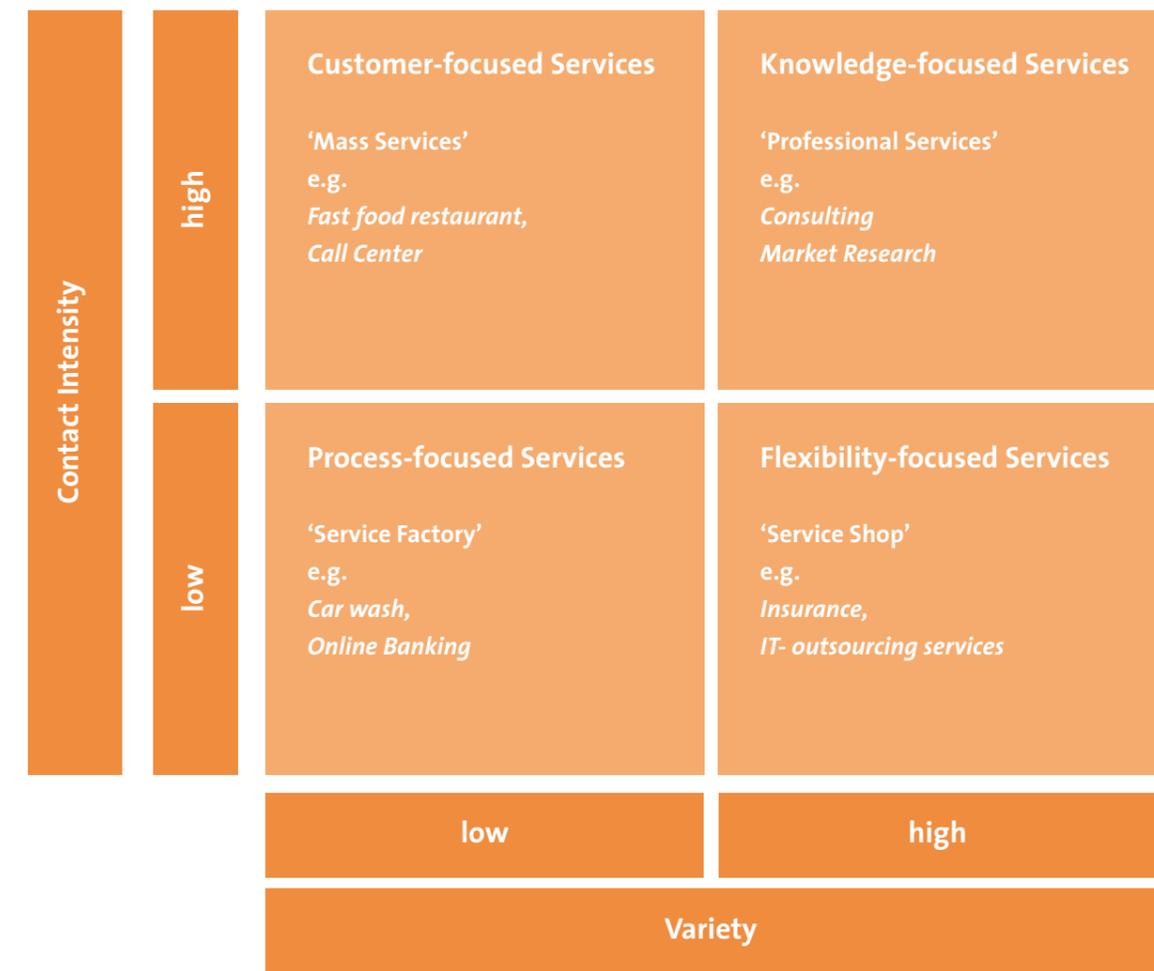
- () *'Process-focused Services (Service Factory)'* include services with comparatively low contact intensity and low variety. Industries that fall in this classification offer highly standardized services (e.g. car wash, online banking).

<sup>5</sup> The investigation carried out by Fährnich et al. (1999) surveyed 282 service companies. A factor analysis run by Barth et al. (2000) identified two meta-factors ('contact intensity' and 'variety') from former eight attributes.

- () *'Flexibility-focused Services (Service Shop)'* have low customer interactions and provide services with a large variety (i.e. low degree of standardization). Industries such as insurances are typified as a *service shop*.
- () *'Customer-focused services (Mass Services)'* are characterized by a high contact intensity but low with variety of services offered. Industries belonging to this type basically deliver standard services. Typical examples of these kinds of services are fast food restaurants or call center agencies.
- () *'Knowledge-focused Services (Professional Services)'*, finally, are dominated by service providers who interact closely with their customers. These services have a high variety and can barely be standardized (e.g. consulting, market research).

After we had completed our data collection, we assigned the survey participants to appropriate type of service. While the classification of some sectors was quite obvious (such as insurance or consulting services) other industries with very heterogeneous services such as IT and internet services were more dubious. In these cases, we additionally inspected the firms' websites in order to get a better understanding of the type of services delivered.

Figure 2.2 Typology of services



Source: Barth et al., 2000

# CHAPTER 3: Methodology and procedure

## 3.1 Objectives and procedure

The main objective of this study was to evaluate innovation practices in the service sector. We aimed to identify differences and similarities in innovation patterns. We have broken down the primary objective into secondary objectives. These secondary objectives have been coupled with the following steps:

- (1) *Objective:* understand the existing and relevant literature.  
*Step:* we first conducted an in-depth literature review so as to provide an overview of prior contributions and identify research gaps. Based on selected and, according to our understanding the most prominent research gaps we designed our empirical investigation.
- (2) *Objective:* operationalization of the conceptual framework.  
*Step:* we developed a questionnaire based on a conceptual framework of Froehle and Roth (2007). The authors gathered factors regarded as antecedents for successfully developing new service products. Most factors have already been acknowledged by prior studies; however, the framework has not been tested yet in its actual and complete form. We transferred definitions and explanations provided by the authors (Froehle & Roth, 2007:182) into measurement scales in order to operationalize their conceptual framework.
- (3) *Objective:* verification of the conceptual framework and the questionnaire.  
*Step:* we tested and adapted the questionnaire in a pretest setting (refer to section 3.3). Then, we collected data using our adjusted questionnaire. We aimed not only to gather information for our data analysis procedure but also to verify the conceptual framework by Froehle and Roth (2007) and acknowledge the measurement scales selected.
- (4) *Objective:* preparation of a reliable data set.  
*Step:* after finishing the data collection process, we inspected the dataset. We completed missing values in the corporate characteristics part and amended illogical information in a few cases. These adaptations included industry belonging, number of employees and company size. In order to accomplish changes we used public sources such as the firm's websites. We furthermore checked the fill out time of each dataset and excluded records that have spent less than twenty seconds on the completion of each subcategory. These steps were carried out to assure a high quality of data.
- (5) *Objective:* gain a basic understanding of innovation patterns of the service industry.  
*Step:* concerning the data analysis, we first investigated general innovation patterns across the whole sample. The goal was to identify gaps between importance of a factor and the actual implementation and existence of a process step or resource, respectively. We analyzed frequencies of 'importance' and 'implementation' for each factor per subcategory (i.e. process steps and resource classification). We used SPSS 15.0 to generate the information and Microsoft Office Excel 2007 to graphically indicate gaps between 'importance' and 'implementation' of each factor (i.e. the difference between both values).

- (6) *Objective:* identification of different types of innovators.

*Step:* after reviewing gaps across all kinds of companies and sectors, we applied a hierarchical cluster analysis (Ward's method) so as to investigate the data in more depth. We used four variables including information of a firm's 'innovation orientation' in order to identify different types of innovators within the sample (refer to section 3.3). A three-cluster solution was deemed most suitable based on inspection of the results. The clusters turned out to be almost similar in size ( $n = 39; 30$  and  $33$ ). In order to test whether differences between the clusters were highly significant we applied a one-way ANOVA. We set the significance level at 0.05. The F-ratio significance showed a level of 0.000 for all three clusters. We furthermore applied a post-hoc test (Scheffé) so as to identify differences and similarities between the clusters.

- (7) *Objective:* a detailed analysis of the clusters generated.

*Step:* we described each type of innovator according to significant corporate characteristics. The next step in the investigation was to identify the most prominent gaps (i.e. important factors not yet sufficiently addressed). We therefore generated a ranking of the top 10 gaps for each type of innovator. In order to assure that only important factors were included in the ranking (i.e. factors with a high average score in the importance rating), we used a simple mathematic formula. The so called 'opportunity algorithm' (Ulwick, 2005:45) was developed for the identification of areas for product improvement (see Figure 3.1).

Figure 3.1 Opportunity algorithm

$$\text{Opportunity} = \text{Importance} + \max(\text{Importance} - \text{Satisfaction}, 0)$$

Figure 3.2 Adapted opportunity algorithm

$$\text{Room for improvement} = \text{Importance} + |\text{Importance} - \text{Implementation}|$$

We decided, however, to adapt the algorithm to the purposes of our research. Differing from the opportunity algorithm and the simple graphical gap-analysis in the first part of our analysis, we considered absolute value instead of difference. Thus, discrepancies are included regardless of whether they were positive (i.e. importance > implementation) or negative (i.e. importance < implementation). The main idea here is that not only positive gaps (i.e. achieved levels are less than the ideal levels), but also negative gaps (i.e. achieved levels exceed the ideal levels) have a negative effect on innovation success. The latter, as exceeding the required level of attention, might waste valuable resources (Song & Thieme, 2004). The adjusted algorithm is displayed in Figure 3.2.

- (8) *Objective:* give recommendations to managers and academics.

*Step:* we finally provided recommendations and input for academics (i.e. contribution of our study and further research) and managers (i.e. room for improvements and diagnostic tool).



### 3.2 Scope

The population of our study was ‘all service companies operating in Germany during the realization of data collection (August, 13. to September, 18., 2009)’. Bearing in mind that the realization of this investigation was restricted to a period of 4 months we decided to limit our data set to approximately 100 German service companies. Accounting for the preparation and post processing phase this left us with only five weeks for the collection of data.

During the questionnaire roll-out, we predominantly addressed the companies’ CEOs as we expected them to have the best overview of innovation activities within an organization. It was then up to the top management, however, whether they wanted to fill out the questionnaire themselves or send it to a person involved in the new service development process (e.g. innovation manager, marketing department, R&D, etc.). We choose this option given the multitude of different company structures in the service sector (i.e. hierarchical and departmental structures).

We decided not to restrict our sample to a particular company size or service sector. As mentioned in the research gaps section (2.2), most of the studies dealing with innovation predominantly focused on large enterprises (Dömötör et al., 2007). Our research, however, met an additional challenge by sampling a considerable amount of SMEs. A particular investigation of this group has been considered necessary due to its importance for the economy. Apparently, small- and medium-sized companies represent ‘the backbone’ of Germany’s economy (Herstatt et al., 2007). According to the Federal Statistical Office Germany (Statistisches Bundesamt, 2008) 99.3%<sup>1</sup> of German companies fall into the category of SMEs. This fact shows the enormous potential for the whole economy emanating from an increase of the innovation performance of SMEs. Consequently, it is essential for SMEs to have particular measures, tools and statistics which support them to improve the effectiveness of their innovation process (Schweke & Becker, 2009).

<sup>1</sup> SMEs defined by the Federal Statistical Office Germany: companies with up to 249 employees and a turnover of not more than 50 million Euro p.a.

A detailed discussion of the reliability and validity of data as well as the limitations of our investigation can be found in Appendix B and C.

### 3.3 Questionnaire Design

In order to evaluate the NSD practice of German service companies we applied a web based survey. Potential participants enter the website where the questionnaire was stored via a web-link. Figure 3.1 shows the body of the questionnaire. The questionnaire was divided into three sections (Section A, B and C). Section A and B were based on the conceptual framework provided by Froehle and Roth (2007). At the beginning of the questionnaire, participants were greeted with a brief explanation of the purpose of the study, the structure of the questionnaire and how to answer the survey questions. To make sure each participant understood ambiguous items and key words we provided brief explanations by using footnotes throughout the survey.

The first section (Section A) contained selected steps important for innovation-processes acknowledged by prior studies. These steps covered the whole development process; starting from the ‘design stage’ and continuing with the ‘analysis stage’, the ‘development stage’ and finally the ‘launch stage’. In this section we firstly asked the participants to evaluate the steps in terms of their general importance and, secondly, to which degree these steps are actually implemented within their own organization. We applied two seven-point Likert-type scales to each factor ranging from 1 (= not important at all; respectively: = not implemented at all) to 7 (= very important; respectively: = strongly implemented).

The questionnaire continued with Section B. This part referred to resources required in order to successfully run through the NSD-process described in Section A. Within Section B we made statements about ‘intellectual’, ‘organizational’ and ‘physical’ resources. Again, we asked participants how important they consider a resource to be and secondly, to which degree they agree or disagree with

Figure 3.3 Body of the questionnaire

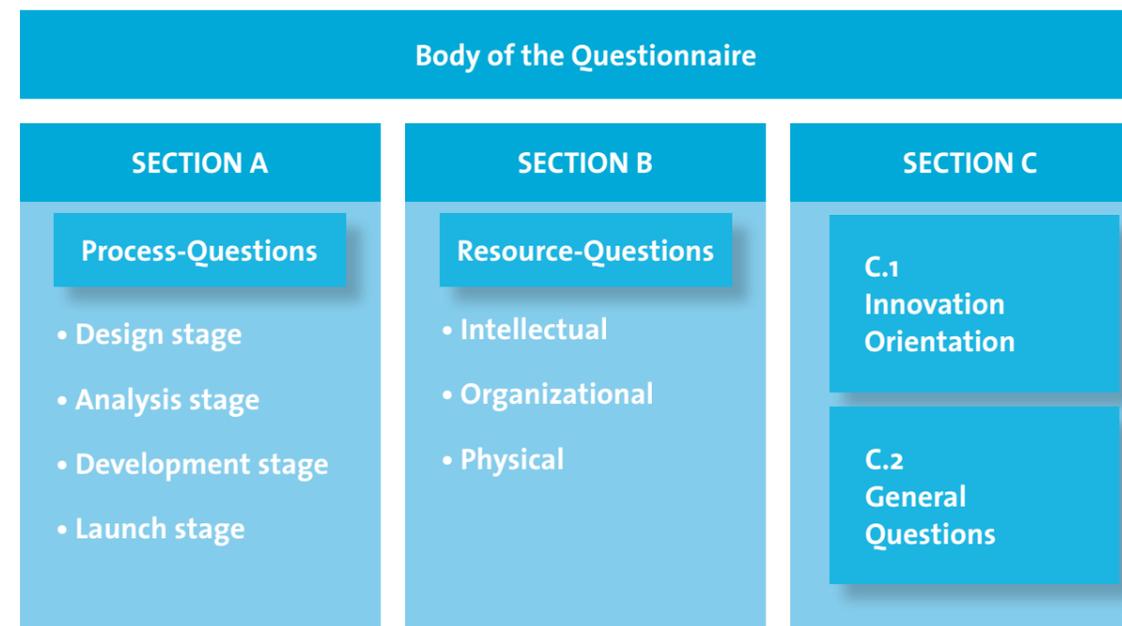


Table 3.1 Measurement of innovation orientation

Variable	Measurement items	Sample references
Innovation leadership	Our company considers itself the innovation leader within the industry	Paladino*, 2007
Innovation culture	Our firm has an organizational culture and management comprehension that supports and encourages innovation	Akman & Yilmaz, 2008; Tajeddini et al., 2006
Radicalness	Innovations are generally minor improvements in existing services	Paladino, 2007
Readiness to assume risk	Innovation is perceived risky and attempts are made to avoid it	Hurley & Hult, 1998

\* Aggregation of multi-item measurement scale

the statement. Similar to Section A, we used two seven-point Likert-type scales ranging from 1 (= not important at all; respectively: = strongly disagree) to 7 (= very important; respectively: = strongly agree).

Finally, the last section (Section C) was divided into two parts. The first part (C.1) contained four questions in order to get deeper insights into the general attitude of the participants towards innovation (i.e. the degree of innovation orientation). This made it possible to run a cluster analysis and

identify different types of innovators across industries and firm size. We used measurement items acknowledged by prior studies. Table 3.1 provides an overview of the variables applied. Participants were asked to rate a statement concerning each factor on a seven-point Likert-type scale from 1 (= strongly disagree) to 7 (= strongly agree).

The second part (C.2) comprised general questions about the company. This included relevant corporate characteristics such as company age, industry, size, location of



headquarters, etc. This part contained short open-ended questions (e.g. founding year) and multiple-choice questions (e.g. industry belonging).

The survey was conducted in the German language, as the focal point was service companies operating in Germany. Hence, all items had to be translated from English into German. We later translated the questions back into English to ensure conceptual equivalence.<sup>2</sup>

The questionnaire was finally pre-tested by a group of scholars (theoretical perspective) and practitioners (practical perspective) working in the field of NSD and innovation management. Our aim was to receive feedback from experts who are familiar with the topic (internal point of view). Moreover, the questionnaire was also pre-tested by professionals not directly involved in the topic (e.g. academics from other departments such as engineering) in order to cover an external point of view. Overall, we received input from ten persons. Thereby, the respondents provided us with feedback to indicate whether they understood the questionnaire's instructions, the meaning of the questions or the meaning of the words in the questionnaire.

<sup>2</sup> Compare: Gao et al., 2007:7.

### 3.4 Sample

#### 3.4.1 Sampling

Our data was generated by three convenience samples: (1) one purposive sample of service companies chosen from the B2B portal *www.kompass.com*, (2) a second sample from the global business-networking portal *www.xing.com*, and finally (3) third, we managed to gain the support of the *German Association for Small and Medium-sized Businesses (BVMW)*. Having the BVMW as a strategic partner had two main advantages. First, the organization sent out additional invitation emails to approximately 250 members (sample 3). Second, mentioning the well-known partner increased the likelihood of responses. Table 3.2 summarizes the number of companies contacted as well as the responses received (in total and in percentage). Table 3.3 precisely illustrates the share of responses generated by each of our convenience samples.

Table 3.2 Overview of response rates by industry

Sector	Sample size	Response*	Response rate (%)
Computer, IT & Internet	300	21	7.00
Consulting	229	21	9.17
Hotel, Restaurant & Tourism	281	15	5.34
Finance & Insurance	304	22	7.24
Freight & Logistics	293	13	4.44
Retail & Wholesale	280	7	2.5
Others	13	15	--
<b>Total</b>	<b>1950**</b>	<b>114</b>	<b>5.85</b>

\*Numbers include responses of BVMW members;  
\*\*Classification of 250 BVMW members not available

Table 3.3 Overview of response rates by sample

Sample	Sector	Sample size	Response	Response rate (%)
kompass.com	Computer, IT & Internet	181	14	7.73
	Consulting	188	11	5.85
	Hotel, Restaurant & Tourism	209	10	4.78
	Finance & Insurance	205	10	4.88
	Freight & Logistics	239	10	4.18
	Retail & Wholesale	223	3	1.35
	Others	--	8	--
	<b>Total</b>	<b>1245</b>	<b>66</b>	<b>5.30</b>
xing.com	Computer, IT & Internet	119	6	5.04
	Consulting	41	10	20.39
	Hotel, Restaurant & Tourism	72	3	4.17
	Finance & Insurance	99	12	12.12
	Freight & Logistics	54	3	5.56
	Retail & Wholesale	57	4	7.02
	Others	13	3	--
	<b>Total</b>	<b>455</b>	<b>41</b>	<b>9.01</b>
BVMW	All sectors	250	7	2.8
<b>Total</b>		<b>1950</b>	<b>114</b>	<b>5.85</b>



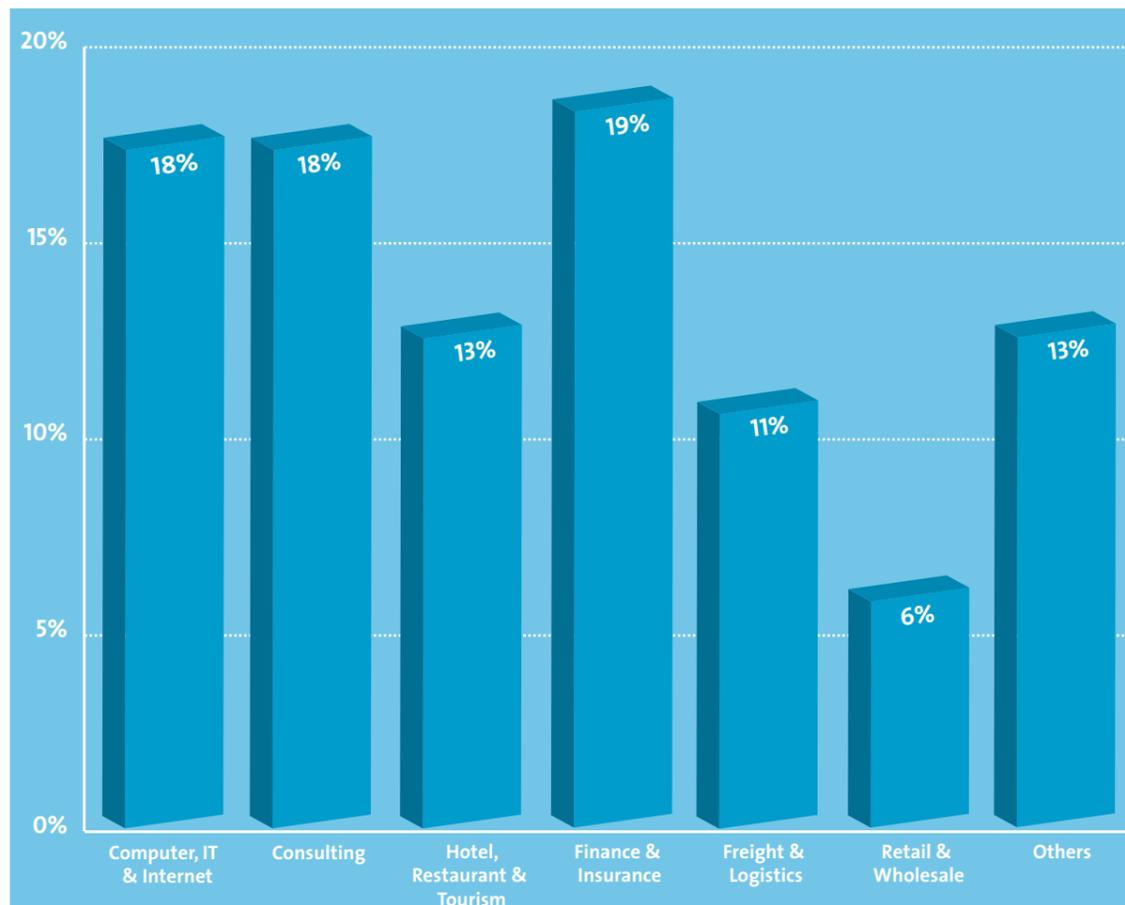
### 3.4.2 Main characteristics of the sample

In summary, a total of 1950 companies were contacted throughout three independent convenience samples. In total, 121 participants filled out the questionnaire. The elimination of cases with missing values led to a final sample comprising data from 114 companies. This represents a very moderate response rate of 5.85%.

#### (1) Industry classification

Figure 3.4 shows the share of the companies' industry affiliation, expressed in percentages. Most responses came from companies of the 'finance & insurance' cluster. In figures, these companies have an overall share of 19% of the total responses. The second biggest group of survey participants belong to 'consulting' and 'computer, IT & internet'. Both have a share of 18% in our final sample. The clusters 'hotel, restaurant & tourism' and 'freight & logistics' are represented by 13% and 11% respectively. In comparison, companies belonging to 'retail & wholesale' (total share of 6%) were barely willing to take part in our survey.

Figure 3.4 Industry group belonging (in percent)



#### (2) Company size

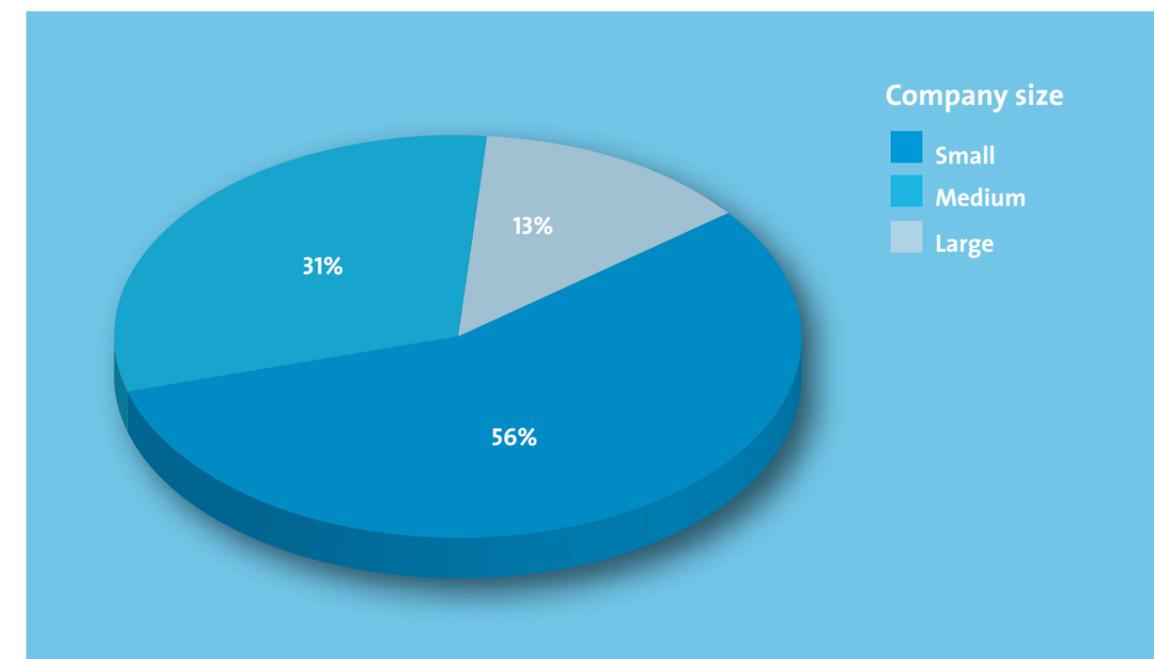
Our final sample consists of 69% small- and medium-sized enterprises (small = 13%; medium = 56%) and 31% large organizations (see Figure 3.5). For the classification of company size we used the official definition of the Federal Statistical Office Germany (Statistisches Bundesamt, 2008) (see Table 3.4).

Table 3.4 Classification of company size

Size range	Number of employees	Annual turnover (in Million Euro)
Small enterprises	< 9	< 2
Medium enterprises	9 to < 249	2 to 50
Large enterprises	> 249	> 50

Source: Federal Statistical Office Germany (Statistisches Bundesamt, 2008)

Figure 3.5 Company size (in percent)



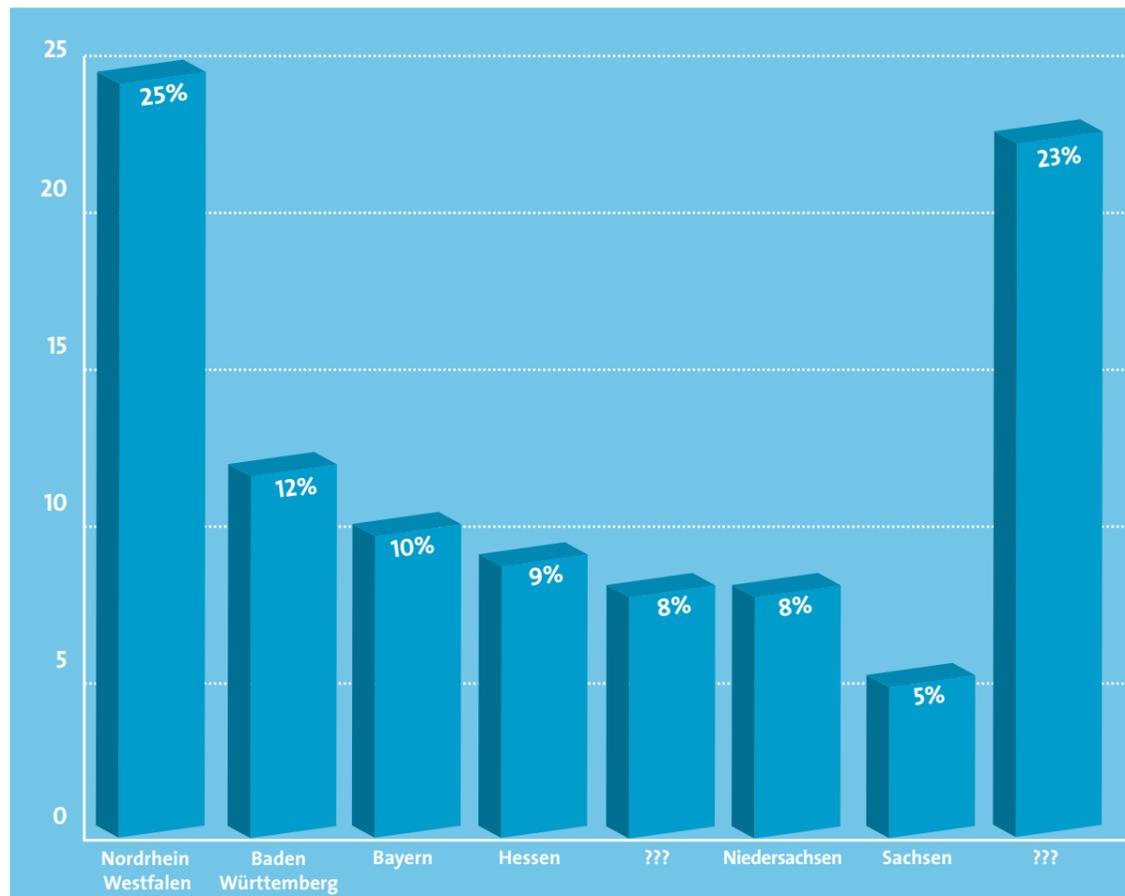


### (3) Location of headquarters

Overall, the frequencies of responses from each state reflect a good picture of the whole population measured by size and economic importance. Our data analysis determined that the majority of companies included in our sample are located in North-Rhine-Westphalia (German: Nordrhein-Westfalen). This state ranks first in terms of population (17.9)<sup>3</sup> and is of great economic importance to Germany and to the larger European setting. Similar, Baden-Württemberg (10.8)<sup>13</sup>, Bayern (12.5)<sup>13</sup>, Hessen (6.1)<sup>13</sup> and Niedersachsen (7.9)<sup>13</sup> rank on top of statistics regarding population and economic relevance.

<sup>3</sup> in Million inhabitants (Statistisches Bundesamt, 2009:29).

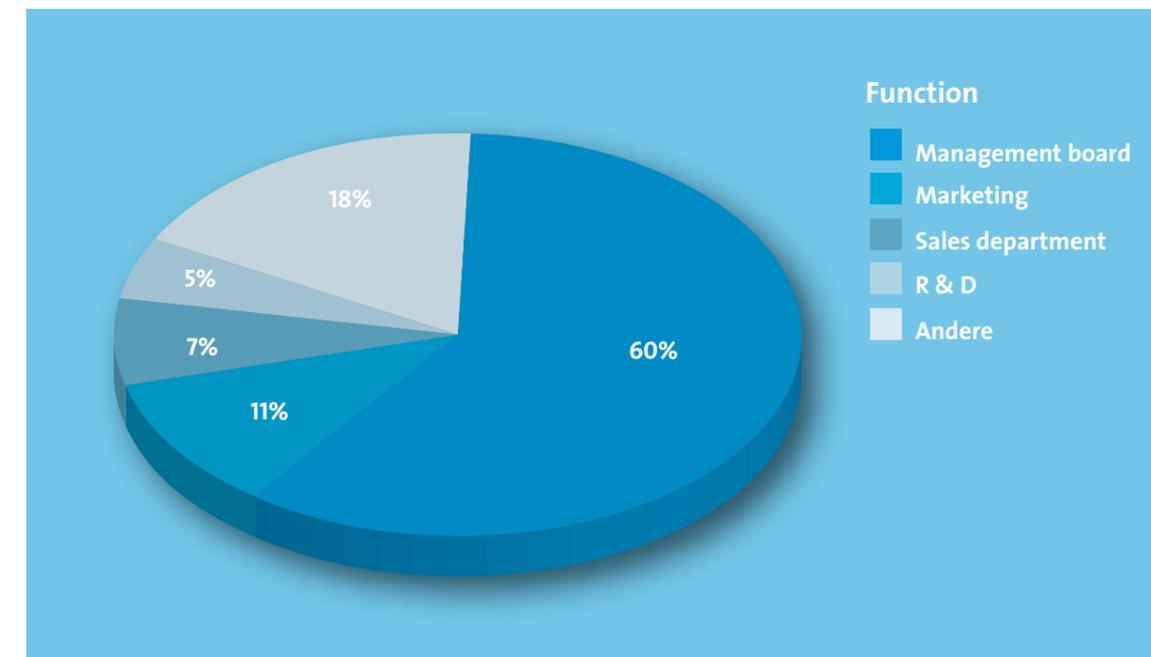
Figure 3.6 Location of headquarters (in percent)



### (4) Function of participants

Our data further indicate that 60% of the questionnaires were actually completed by the management board. Figure 3.7 illustrates the shares of participants' functions within the services companies.

Figure 3.7 Function of participants (in percent)



## 4.1 Findings across industries

The following two sections (section 4.1.1 and 4.1.2) present the findings of our data evaluation process. Both sections provide information based on the responses of all survey participants including data sets across all industries. This analysis helps to evaluate whether service firms exhibit adequate competences in process- and/ or in resource related requirements for successful NSD activities.

Participants were asked to evaluate selected factors in terms of (1) 'importance' of the factor in general and (2) the actual degree of 'implementation' within their own service companies. Hence, participants were asked to assess both 'importance' and 'implementation' for each factor by rating them with a value between 1 and 7 (with 1 = 'not important at all'; respectively: = 'not implemented at all' and 7 = 'very important'; respectively: = 'strongly implemented'). As a consequence, we were able to identify deficiencies in innovation performance by comparing the mean values of 'importance' and 'implementation' of each factor. The difference (or gap) between the mean values of 'importance' and 'implementation' represents the lack in NSD performance for the average of all service companies (i.e. importance - implementation = gap / room for improvement). As a limitation, the following findings demonstrate a self-assessment by participants rating their own companies' current abilities in innovating new services.

### 4.1.1 Evaluation of the process

This section charts how participants assessed process-related factors (demonstrated by 'steps' in the NSD-process) with respect to 'importance' and actual 'implementation' within an organization. The results are discussed following the stages of the NSD-process (characterized as 'subcategories' in our conceptual framework: see section 2.3) including 'design stage', 'analysis stage', 'development stage' and 'launch stage'.

The findings are presented in two steps. The first section briefly describes the main characteristics of the gap-analysis chart and introduces the most important factors of a given stage. In a second step, the most striking gaps

are outlined, i.e. the strongest differences in the mean values of the variables 'importance' and 'implementation' (graphically illustrated by two curves). Originating from a participant's point of view, the 'importance' curve shows a best practice scenario whereas the 'implementation' curve demonstrates the actual status quo of NSD performance.

#### (1) Design Stage

Figure 4.1 shows the results for the 'design stage', where new service ideas are generated, evaluated and selected (Froehle & Roth, 2007:174-175). The figure illustrates how participants assessed the general importance of each step and to which degree this step is currently implemented within the firms.

At first, it should be noted that the participants evaluate all steps as being relatively important throughout the whole stage. All steps are rated with values starting from at least 5.10 to 6.54. The high rating of each step reveals that this stage is indeed mentioned as the most important one, closely followed by the 'launch stage', 'analysis stage' and eventually the 'development stage'.

Among all significant steps, we determine that (1) 'strategic definition', (2) 'customer focus II' and (3) 'development motivation' are ascribed as the most important by participants (see Table 4.1; for a complete list of factors refer to Appendix D). This means that the majority of participants in our sample highlighted that defining and communicating strategic goals during the design stage is the most essential step in order to successfully run through the NSD process. Furthermore, the participants point out the relevance of meeting the needs of a specific customer or market segment during the initial conceptualization of new services ('customer focus II'). This corresponds with the high rating of 'development motivation' which essentially implies that developing concepts are more motivated by meeting real customer or business needs rather than primarily focusing on latest technologies.

The step 'alliance design input', in contrast, was considered to be of relatively little importance to the

participants. As opposed to the other steps it achieved an importance of 5.10. Following this, most of the participants of service companies claim that presenting an initial concept to suppliers or partners in order to receive external feedback is only of moderate importance. Even though external linkages are not seen as highly significant during this stage, they were generally evaluated as a valuable intellectual source of information (see resource-related factors 4.1.2).

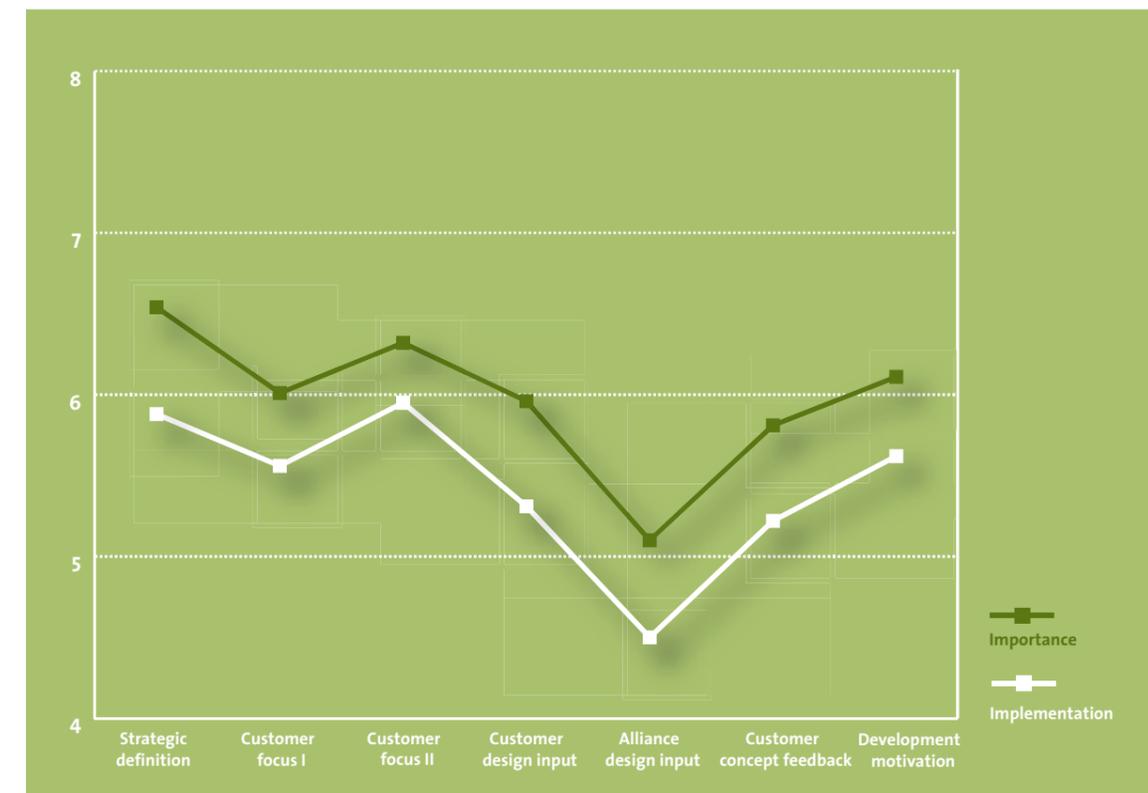
Overall, it is remarkable that the importance curve constantly exceeds the implementation curve, which means that all steps to be evaluated here are not implemented to the degree required. The most striking feature of Figure 4.1, though, can be found in the similarity of the size of the gaps for each step (constantly between 0.36 and

0.68). Hence, all steps lack in meeting the expectations set by the participants. All steps leave almost equal room for improvement in order to achieve NSD excellence.

Table 4.1 Details on design stage

Rank	Factor	Importance
1	Strategic definition	6.54
2	Customer focus II	6.32
3	Development motivation	6.11

Figure 4.1 Gap-analysis of design stage





## (2) Analysis Stage

Figure 4.2 indicates the degree of 'importance' and the actual 'implementation' of steps considered significant during the 'analysis stage' of the NSD-process. The 'analysis stage' evaluates the concept selected from the 'design stage' in terms of viability (Froehle & Roth, 2007:174-175).

Similarly to the 'design stage', the importance of each step scores on a considerably high level and ranges between 5.39 and 6.17. However, in comparison to the 'design stage', the discrepancies between the 'importance' and the actual 'implementation' are overall lower. Table 4.2 indicates the most important steps within this stage from the participant's point of view. Financial analyses (i.e. analyzing the financial and economical viability of new service concepts) were considered comparatively more important

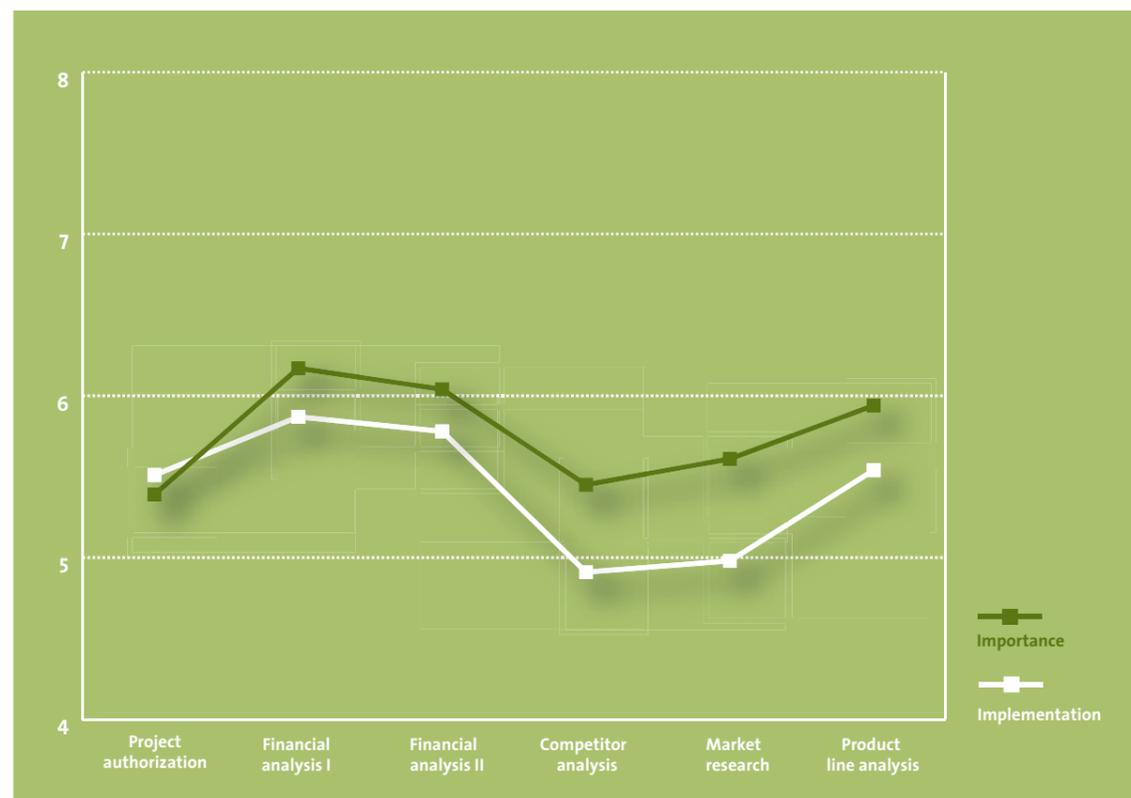
than classical marketing analyses such as market research efforts or competitor analysis.

Considering the gaps mentioned above, Figure 4.2 demonstrates that steps can roughly be divided into two distinct categories. Namely, the steps whose scores are close together and those where clear discrepancies between 'importance' and 'implementation' can be identified. While

Table 4.2 Details on analysis stage

Rank	Factor	Importance
1	Financial analysis I	6.17
2	Financial analysis II	6.04
3	Product line analysis	5.94

Figure 4.2 Gap-analysis of analysis stage



the implementation of financial analyses almost satisfies the expectations (i.e. financial analysis I and II: both gaps at approximately 0.3), the marketing steps (i.e. market research: gap = 0.63; competitor analysis: gap = 0.53 and product line analysis: gap = 0.40) leave comparatively more room for improvement. This means that the participants advance the view that classical marketing methods generally lack best-practice implementation at this stage of the NSD-process.

With regards to 'project authorization', we find this to be the only step in our investigation where the implementation curve exceeds the importance curve (negative gap = -0.12). We assume that a majority of participants feel that this step is implemented in an exaggerated way. According to other scholars (e.g. Menor & Roth 2008; Camacho & Rodriguez, 2005), formalization of new service development efforts is required to some degree here. However, the authors Menor & Roth (2008) and Camacho & Rodriguez (2005) warn that this can also become an obstacle adding bureaucracy and rigidity to the development process.

## (3) Development Stage

Figure 4.3 displays the findings relevant for the 'development stage'. This stage includes steps to further develop a concept to a product that is ready to market. Again, most of the steps have been rated relatively high by the participants. All in all, the factors range between 4.86 and 6.41. But in comparison to the previous stages, the fluctuation of both curves is more evident.

The rating of the steps in terms of importance finally exposed that (1) 'staff training', (2) 'pre-launch testing' and (3) 'service fail-safing' were rated as being the most significant steps during the development stage (see Table 4.3). The evaluation of this stage reveals that two of the most important steps concern factors which are required in order to improve the abilities of front-line employees (namely (1) training front-line staff in how to support the service; (3) identifying possible errors caused by employees). The high rating seems to be a logical consequence taking into consideration that services are not tangible

and strongly depend on a high frequency of customer interactions (e.g. Berry et al., 2006; de Jong et al., 2003).<sup>1</sup>

In addition, we found that participants consider a 'pre-launch test' another crucial step to optimize service innovations. This measure eliminates errors and, therefore, improves the likelihood of a new service's success.

In contrast, 'process-flowcharting' was considered to be least important to NSD-performance. The factor stands for 'service blueprinting'.<sup>2</sup> We assumed that this comparatively low rating could be explained by the high percentage of companies that focus on business clients (i.e. business-to-business). Therefore, we conclude that the service blueprint method is more important to enterprises with end customer contact. This is because contact in B2B relationships takes place on a more individual-basis and is more complex. However, it could be difficult to standardize contacts and display line of visibility by service blueprint. We therefore checked the correlation between 'main type of customer' and the rating of 'process-flowcharting'. Surprisingly, business-to-business organizations rated the importance higher than business-to-customer organizations (4.96 and 4.63 respectively) and furthermore address the factor to a slightly better degree (gaps = 0.90 and 1.04 respectively). Our hypothesis therefore was not supported.

The gaps of this stage range between values from 0.31 to 0.97. According to our findings, preconditions for a successful development of new services are not ideal yet. With respect to 'process-flowcharting', findings are controversial. On the one hand, it is the factor with the overall lowest importance score (4.86). On the other hand, the step ranks second highest in terms of room for improvement (gap = 0.97). Another large gap between 'importance' and 'implementation' is the area of 'market confirmation' (gap = 0.87). Participants stated that new service products are not sufficiently acknowledged by a market test prior to the launch.

<sup>1</sup> Also see: Dolfsma, 2004; de Jong & Vermeulen, 2003.

<sup>2</sup> "Service Blueprinting is a tool that maps the chronological flow of activities, interactions, and support processes of a service, all in a logical visual picture that starts with the customer's experience" (Brown & Bitner, 2006)



#### (4) Launch Stage

Figure 4.4 shows our findings regarding the 'launch stage'. This stage relates to the steps concerning market launch and commercialization of a new service.

The first notable characteristic of Figure 4.4 is that all steps are given a great importance; at least 5.72 up to 6.28. As already mentioned above, this stage was rated the second

most significant stage, closely following the 'design stage'.

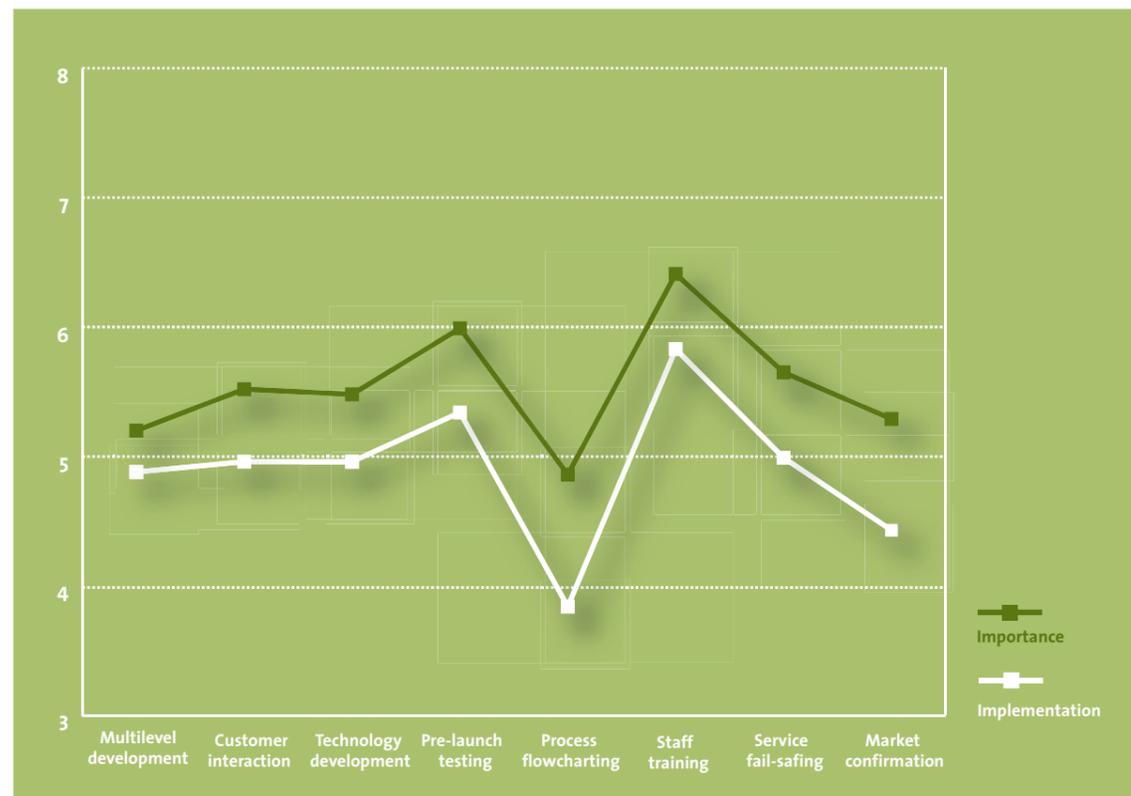
Among all important launch activities, four were seen as slightly more essential, namely: (1) 'internal promotion'; (2) 'expectation setting'; (3a) 'customer training and (3b) 'post-launch evaluation' (see Table 4.4). The top ranking was given to 'internal promotion' that, again, concerns the performance potential of employees with close customer interactions. This reconfirms the perceived importance of front-line employees for developing and introducing a new service. Accordingly, the third position refers to 'customer training' which is - most of the time - carried out by front-line staff and aims at educating customers in correctly using the new service. (Berry et al., 2006; Dolfsma, 2004).<sup>3</sup>

<sup>3</sup> Also see: de Jong & Vermeulen, 2003; de Jong et al., 2003.

Table 4.3 Details on development stage

Rank	Factor	Importance
1	Staff training	6.41
2	Pre-launch testing	5.99
3	Service fail-safing	5.65

Figure 4.3 Gap-analysis of development stage



The participants also pointed out that establishing a realistic expectation in customers for the newly introduced service (referring to 'expectation setting') is another central precondition for successful service innovation. In order to set expectations, appropriate marketing measures are needed. However, the companies in our sample seem to have some difficulties in actually carrying out the required marketing activities.

Alike previous stages, Figure 4.4 reveals room for improvement with respect to all steps throughout the launch stage. There is a clear discrepancy between the importance curve and the implementation curve in all steps. Gaps range from 0.52 to a maximum of 0.72 for 'expectation setting'. Among all process stages, the launch stage is perceived to leave the second largest room for improvement (average

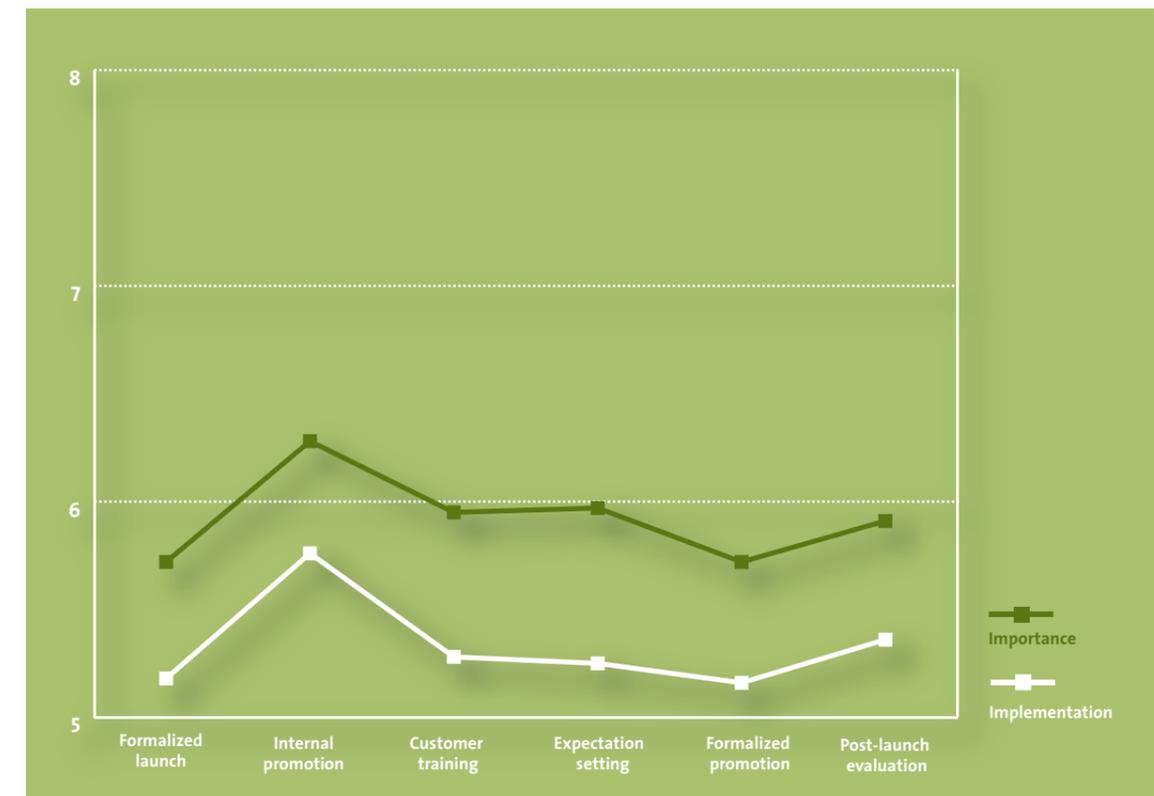
of all gaps in this stage = 0.59).<sup>4</sup> All in all, we conclude that participants of our survey hold the view that marketing efforts for new services are not adequately implemented within their companies yet.

<sup>4</sup> Compared with other stages: 'design stage' = 0.54; 'analysis stage' = 0.34; 'development stage' = 0.63.

Table 4.4 Details on launch stage

Rank	Factor	Importance
1	Internal promotion	6.28
2	Expectation setting	5.97
3	Customer training Post-launch evaluation	5.95

Figure 4.4 Gap-analysis of launch stage





### 4.1.2 Evaluation of resources

The following section discusses the results from a resource-perspective. This is done in the same manner as in the section above. First, the most important resources of each subcategory are outlined. Second, the most prominent gaps are explained in more detail.

#### (1) Intellectual Resources

The first subgroup of resources refers to the experience, skills, knowledge and creativity of internal (employees) and external (e.g. partners, suppliers, customers, etc.) sources.

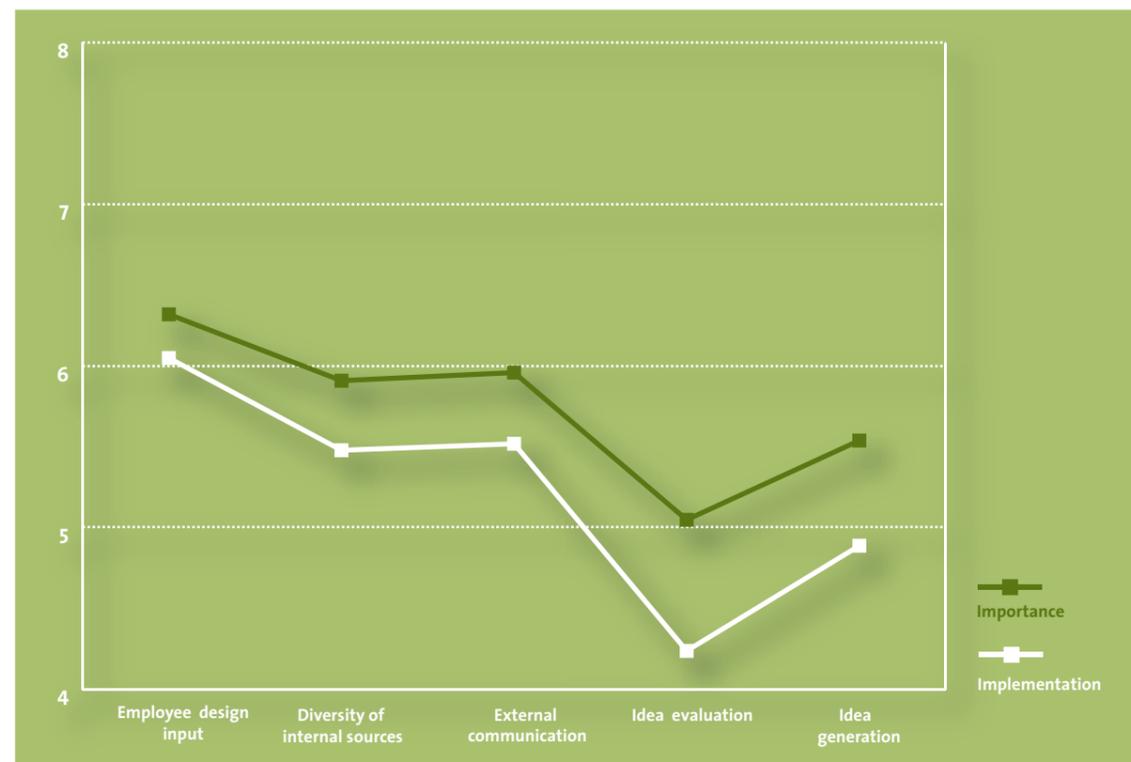
Figure 4.5 indicates that a diversity of sources is considered important. Participants rated the design input of own employees as most important (see Table 4.5). This input should come from different divisions of an organization ('diversity of internal sources'). Beside internal

sources, participants ascribe particular importance to external sources ('external communication'). However, as mentioned above, participants rated 'alliance design input' during the 'design stage' comparatively lower (importance = 5.10). We learnt that external sources are important as a source of new ideas and information, whilst feedback is not necessarily needed during the 'design stage'.

Table 4.5 Details on intellectual resources

Rank	Factor	Importance
1	Employee design input	6.32
2	External communication	5.96
3	Diversity of internal sources	5.91

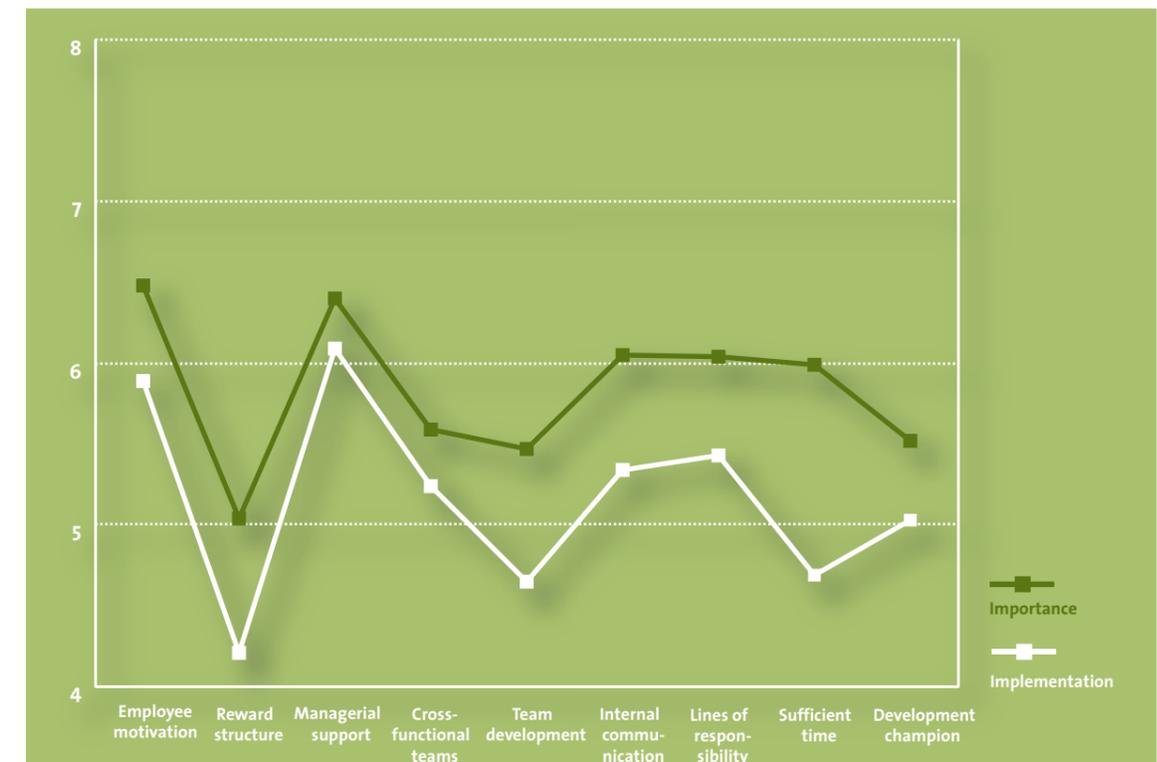
Figure 4.5 Gap-analysis of intellectual resources



The three most important resources, however, are already fairly well addressed. In other words, the importance curve is not significantly above the implementation's curve level. Most prominent gaps concern the lower ranked factors 'idea evaluation' and 'idea generation'. Even though the existence of a formal method for evaluating new service ideas is of comparatively low importance, this still leaves most room for improvement. The same logic applies to the methods of generating new service ideas. Our questionnaire, however, referred to formal methods for evaluating ideas (e.g. the Stage-Gate® model by Cooper et al. (2004)<sup>5</sup>) and methods for idea generation. Further research should perform qualitative interviews to clarify whether both factors use informal

<sup>5</sup> The original Stage-Gate® model was developed in the mid-1980s. For status quo refer to Cooper, 2009.

Figure 4.6 Gap-analysis of organizational resources



methods for evaluating and generating new ideas instead. Furthermore, forthcoming studies should investigate the role of idea management in the service sector in more detail.

#### (2) Organizational Resources

Organizational resources deal with the formal and informal organization, structure and sequence of the new service development process.

Table 4.6 Details on organizational resources

Rank	Factor	Importance
1	Employee motivation	6.48
2	Managerial support	6.40
3	Internal communication	6.05



Figure 4.6 indicates that most of the organizational resources rank at a high level of importance. Again, two human resource-related factors are considered highly important: 'employee motivation' and 'internal communication'. The first factor deals with the motivation of employees in order to help support the firm's new service development efforts. The latter factor refers to the efficiency of communication between team members from different functional areas involved in the development project. Ranking second place, 'managerial support' is also regarded as highly relevant (see Table 4.6). The top three scores are closely followed by further factors such as 'lines of responsibilities' and 'sufficient time'.

Interestingly, the existence of an incentive system to motivate the team (factor 'reward structure') is rated

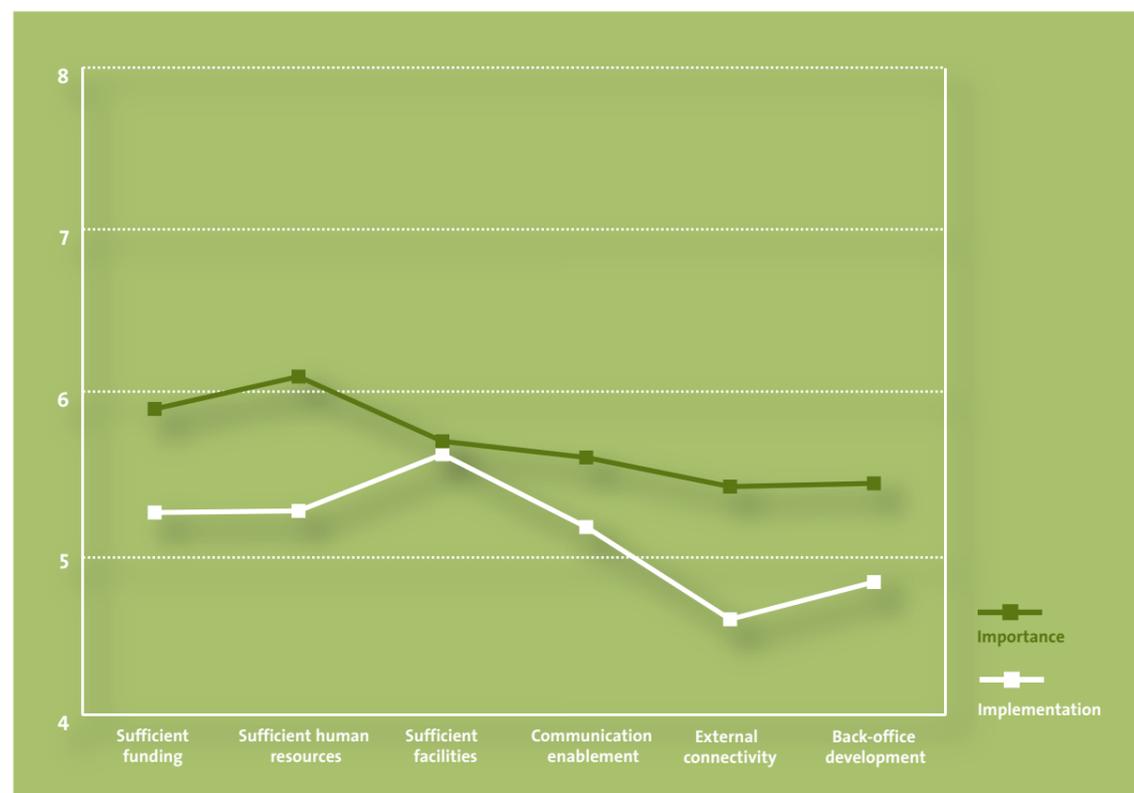
comparatively low by participants – second to last in the total ranking of the importance of all of the factors. However, this was one of the two resources that were not backed up by another reference by Froehle and Roth (2007).

We found that the companies included in our sample estimate that the organization of innovation still offers large room for improvement. The list of most

Table 4.7 Details on physical resources

Rank	Factor	Importance
1	Sufficient human resources	6.09
2	Sufficient funding	5.89
3	Sufficient facilities	5.69

Figure 4.7 Gap-analysis of physical resources



prominent gaps is headed by a lack in 'sufficient time' made available to employees they can spend on the development project. Most surprisingly, this factor was not even included in the original framework of Froehle and Roth (2007).

Another interesting finding relates to 'managerial support'. Only 11 of the 66 participants belonging to the management board stated a negative gap i.e. that more support by the top management is needed. Seven of the participants even rated the implementation as higher than the importance (i.e. more support exists than actually needed). Other functions, however, rated differently. In total, 31 of the 45 participants belonging to other functional areas claimed to perceive a positive gap (i.e. not enough support by the top management). This represents a percentage of 68.9 compared to 16.7 of the management board's self-assessment. This impressively demonstrates the effect of 'key informant bias' (for more information refer to Appendix B). We therefore assume that the actual lack in support by the top management is considerably higher.

### (3) Physical Resources

The last subcategory of our data set gathers input factors required in order to realize the development project. Figure 4.7 indicates a moderate to high importance score for all factors included in this subcategory (ranging from 5.41 to 6.09).

The highest ranked resource of this section, again, emphasizes the importance of human resources to a service company ('sufficient human resources'). Furthermore, participants pointed out that an appropriate amount of financial resources and facilities such as room, working materials, etc. is necessary.

The only resource in this section that is already available sufficiently is facilities. According to the participants, all other factors leave room for improvement (gaps ranging from moderate 0.42 to considerable 0.78). There obviously is a need for an increased availability of funds and qualified employees. Furthermore, participants claim a need for the implementation of IT systems supporting

the innovation process as well as communication channels which would enhance the internal and external communication.

## 4.2 Types of innovators

### 4.2.1 Different innovation clusters

After reviewing the cross-industrial assessment of innovation and new service development patterns, we investigated the sample in more detail. We therefore conducted a cluster analysis (Ward's method) in order to identify different types of innovators. To run the cluster analysis, we used four variables assessing a firm's innovation orientation (see section 3.3): (1) innovation leadership (versus followership); (2) innovation culture; (3) radicalness and (4) readiness to assume risk. A three cluster solution promised the best results. The clusters are almost similar in size (n = 39; 30 and 33). The three cluster solution selected can be found in the following table (Table 4.8).

All clusters can be distinguished clearly from each other. The post-hoc test (Scheffé), however, identified some similarities between the clusters. Companies in cluster 1 score moderate in terms of innovation leadership (3.44; the closer to 1 the more likely that a company considers itself innovation leader) and innovation culture (3.18; the closer to 1 the stronger the innovation culture). Cluster 1 furthermore innovates incrementally rather than in a radical way (2.59; 1 = incremental, 7 = radical) and regards innovation as comparatively risky (4.95; 1 = totally avoiding risks, 7 = totally risk taking). Companies falling in cluster 2 and 3 both consider themselves as innovation leaders (2.33 and 2.12), having a well-established innovation culture (1.60 and 1.55) and to be risk takers when it comes to innovation (6.43 and 6.76). The two clusters differ, however, in the degree of radicalness. Cluster 2 tends to be more radical (5.33) whereas cluster 3 tends to innovate incrementally (2.18). Cluster 1 and 2 are completely distinct from each other whereas both cluster 1 and 3 express an incremental innovation approach.



In a next step, a closer look at the corporate characteristics of companies belonging to each cluster is taken. Table 4.9 summarizes relevant data of the three clusters.

**Cluster 1** contains an above average number of companies from the 'financial service' and 'insurance' sector (12 out of 39 companies within the cluster). This also leads to a large share of companies classified as a 'service shop' (i.e. 50% of this taxonomy subgroup in total). Companies within this taxonomy group have comparatively low customer contact and offer services with a large variety (i.e. low degree of standardization). Moreover, companies in cluster 1 tend to be medium- to large-sized organizations and to a large portion run by a management tier. Given the large share of companies addressing business clients within our sample, cluster 1 includes a considerable amount of firms with a business-to-customers focus (52% of all B2C companies surveyed). Turnovers range from under 2 Million Euro p.a. to above 100 Million Euro p.a. quite equally; however, we identify a concentration of scores at the bottom and top of the scale.

Table 4.8 Three cluster solution

Cluster	Innovation Orientation	Innovation leadership	Innovation culture	Radicalness	Readiness to assume risk
1	Mean	3.44	3.18	2.59	4.95
	N	39	39	39	39
	Std. Deviation	1.501	1.295	.938	1.450
2	Mean	2.33	1.60	5.33	6.43
	N	30	30	30	30
	Std. Deviation	1.269	.724	1.124	.728
3	Mean	2.12	1.55	2.18	6.76
	N	33	33	33	33
	Std. Deviation	.960	.564	.635	.502
Total	Mean	2.69	2.19	3.26	5.97
	N	102	102	102	102
	Std. Deviation	1.400	1.225	1.628	1.301

**Cluster 2** is dominated by companies belonging to 'service shop' and 'professional service' namely 'consulting' and 'computer, IT & internet'. Consequently, services offered highly vary in nature and are therefore difficult to be standardized. Organizations tend to be medium-sized or large and run by either a management or the owner(s). The main customer group is business clients.

**Cluster 3** contains a large share of 'professional services', namely 'consulting'. The cluster has a large share in small- and medium-sized enterprises (SMEs) predominantly run by the owner(s) or a hybrid type (i.e. owner(s) and management). Most of the customers are business clients. Turnovers tend to range towards the lower third of the scale. In cluster three are by far the 'youngest' companies, the average founding year being 1985 (standard deviation: 26.738).

The most surprising finding at this point was that we were able to clearly distinguish clusters according to their

management systems. To our knowledge, no prior study has identified a possible correlation between a service firm's innovation orientation and management organization.

Forthcoming research should investigate this relationship in more detail and clarify whether there actually is a correlation or our finding is actually linked to company size.

Table 4.9 Corporate characteristics of companies

Characteristic	Cluster 1	Cluster 2	Cluster 3	Total	
Industry group	Computer, IT & Internet	6	8	6	20
	Consulting	4	7	9	20
	Hotel, Restaurant & Tourism	4	5	5	14
	Finance & Insurance	12	4	4	20
	Freight & Logistics	3	4	2	9
	Retail & Wholesale	3	0	3	6
	Others	7	2	4	13
Taxonomy	Service Shop	20	11	9	40
	Professional Service	5	9	12	26
	Service Factory	5	4	6	15
	Mass Service	8	6	6	20
Company size	Small	4	2	8	14
	Medium	20	17	17	54
	Large	15	11	7	33
Run by	Run by owner	13	15	19	47
	Run by management	21	14	7	42
	Hybrid type	3	1	7	11
Type of main customers	Business-to-Business	21	19	23	63
	Business-to-Customer	14	7	6	27
	Business-to-Admin.	2	1	1	4
	Other	2	3	2	7
Turnover	< 2 Mil. Euro	9	6	13	28
	2 Mil. to < 10 Mil. Euro	12	9	8	29
	10 Mil. to < 50 Mil. Euro	4	6	6	16
	50 Mil. to < 100 Mil. Euro	2	2	3	7
	> 100 Mil. Euro	12	6	3	21
Founding year	1959	1904	1985	1950	



### 4.2.2 Room for improvement

After we had identified and labeled different types of innovators, we analyzed innovation issues and room for improvement in more detail. We proceeded as follows: First, we generated a top-ten ranking of gaps for each innovator type. In order to identify the most urgent room for improvement we applied the adapted opportunity algorithm explained in the procedure section (3.1). We did so to assure that only factors emerged which were rated as highly important by participants. This does not necessarily mean that only these top-ten factors should be addressed. Appendix F provides an overview of all factors that should be considered by companies belonging to a particular cluster. Second, we analyzed the gaps that all types of innovators had in common, i.e. the factors that appeared in all of the three top-ten lists. Third, we investigated gaps that left room for improvement for two of the three clusters. Forth, we analyzed gaps that just appeared in the individual top-ten ranking of an innovator type.

For each factor we checked scores of importance and gaps. This was done to identify whether the factor was rated as highly important with a small gap or moderately important with a large gap. Furthermore, we checked the factors to discern whether a gap was positive (importance > implementation) or negative (i.e. importance < implementation). At the end of this chapter, overview of our findings, including a summary of current innovation issues for all three types of innovators, is provided.

Table 4.10 contains the top ten lists of factors calculated with the adapted opportunity algorithm. The colors indicate whether a factor concerns all types, two of the types or an individual type only.

#### (1) Prominent gaps in common

Table 4.10 indicates that four factors are perceived as of particular importance to all innovator types. Namely: 'sufficient time', 'strategic definition', 'staff training' and 'employee motivation'. All four factors predominantly emerge from positive gaps i.e. the importance was generally rated higher than the implementation (see Table 4.11; the last three columns contain the amount of negative, neutral and

positive gaps). Only four to eight participants set the implementation higher than the importance. This, however, could also be traced back to a methodological error arising from the questionnaire design. Participants had to rate each factor on two Likert-type scales. We cannot exclude the possibility that participants in some cases ticked a box they did not intend to choose. This issue should be clarified by future research using follow-up qualitative interviews.

The first two factors in common indicate a perceived need for improvement in the general strategic setting of innovation. Employees apparently do not have 'sufficient time' available to spend on the new service development project. Overall, this factor leaves most room for improvement given the large mean for the gap (gap = 1.32; refer to Appendix E). Furthermore, the results indicate that the definition and internal communication of a project's strategic goals require more attention ('strategic definition'). Of all factors, participants rated 'strategic definition' as the most important aspect (importance = 6.54; refer to Appendix D).

The other two factors in common revolve around human resources. Participants declared that extensive training of front-line staff on how to support the new service is a very important step (importance = 6.41) with some room for improvement (gap = 0.57). However, the weighting strongly differs among the three clusters (see Appendix F). Whereas cluster 2 already addresses this factor quite well (gap = 0.33), cluster 3 has moderate and cluster 1 even indicates large room for improvement (gaps = 0.44 and 0.92 respectively).

Regarding the second human resource related factor, participants mentioned that having motivated employees who help supporting the firm's new service development efforts is one of the most important resources (importance = 6.48) leaving a certain amount of room for improvement (gap = 0.59). Again, cluster 1 has the most urgent need for action (gap = 0.82).

#### (2) Prominent gaps for two of the three clusters

This section takes a closer look at gaps that leave room for improvement for two of the three clusters. The results

Table 4.10 Top ten lists: room for improvement per cluster

Rank	Typ 1		Typ 2		Typ 3	
	Factor	Mean	Factor	Mean	Factor	Mean
1	Sufficient time	7.84	Sufficient time	7.76	Strategic definition	7.25
2	Expectation Setting	7.38	Internal communication	7.28	Staff training	7.22
3	Strategic definition	7.38	Sufficient human resources	7.27	Sufficient time	7.09
4	Lines of responsibility	7.37	Strategic definition	7.23	Customer focus II	7.03
5	Staff training	7.36	Employee motivation	7.07	Employee motivation	7.00
6	Employee motivation	7.32	Lines of responsibility	7.03	Pre-launch testing	7.00
7	Internal promotion	7.31	Employee design input	6.90	Sufficient funding	6.97
8	Post-launch evaluation	7.23	Staff training	6.83	Customer design input	6.97
9	Customer training	7.17	Idea generation	6.80	Internal communication	6.97
10	Managerial support	7.11	Managerial support	6.80	Development champion	6.97

■ Related to all types      ■ Related to type 2 & 3  
■ Related to type 1 & 2      ■ Related to individual type

Table 4.11 Details on prominent gaps in common

Rank	Factor	Subcategory	Opportunity	-	o	+
1	Sufficient time	Resources – Organizational	7.58	8	37	64
2	Strategic definition	Process – Design Stage	7.30	4	55	53
3	Staff training	Process – Development Stage	7.15	6	62	41
4	Employee motivation	Resources – Organizational	7.14	5	55	50

indicate that cluster 1 and 2 are struggling with the demarcation of responsibilities in service innovation projects (importance = 6.07; gap = 0.85). However, the room for improvement is distinctly larger for cluster 1 than it is for cluster 2 (gaps = 1.13 and 0.48 respectively).

In addition, participants of both clusters evaluated the importance of top management support as high (importance = 6.38). 'Managerial support', however, still implies some room for improvement (gap = 0.40). Again, the need for action is larger for cluster 1 (gap = 0.55 compared to 0.20). However, as brought forward in section 4.1.2 (2), a key informant bias is related to this factor.

Compared to cluster 1 and 2, innovators of cluster 3 did not count 'lines of responsibilities' and 'managerial support' to their most prominent gaps. We link this positive assessment to the overall attitude of cluster 3. As we learned from our cluster characterization, companies falling in the third cluster tend to have a good innovation culture and are predominantly run by the owner(s). This finding is supported by the qualitative interview that we conducted during the collection of data. Our interview partner was the founder of a company originally run by him alone. The company is now run by a management. The former owner clearly advanced the view that companies managed by



Table 4.12 Details on prominent gaps for two of three clusters

Rank	Factor	Subcategory	Opportunity	-	o	+
1	Lines of responsibility	Resources – Organizational	7.22	6	27	34
2	Managerial support	Resources – Organizational	6.97	6	39	23
1	Internal communication	Resources – Organizational	7.11	6	30	25

the owner(s) are more willing to support innovative activities than management-led companies. He stated that his experience has demonstrated that managers tend to avoid risky decisions with a high degree of uncertainty. This is because managers are pit against success and objectives set. A failure might result in serious consequences such as dismissal. However, this is the founder's opinion and can therefore only offer a limited source of information.

Besides the difference in management structure, companies in cluster 1 and 2 mainly represent medium to large sized organizations. This might be another explanation for the organizational issues. Due to a smaller number of employees, small- and medium-sized companies (as predominately found in cluster 3) tend to have slimmer organizational structures with fewer hierarchical levels. This can make responsibilities more clear and accelerate decision-making processes (Doole & Lowe, 2008:171).

Cluster 2 and 3 both ascribed high importance to 'internal communication' (= 6.34). Even though cluster 1 has most room for improvement (gap = 1.11) this factor does not appear in the top ten list given a lower rating of importance (importance = 5.72). However, cluster 2 indicates large (gap = 0.72) and cluster 3 low (gap = 0.34) additional room for improvement. Cluster 1 and 3 have no additional factors in common. Again, all gaps mentioned here generally stem from an importance greater than the actual implementation (positive gaps; see Table 4.12).

### (3) Prominent individual gaps type 1

Having discussed the gaps of room for improvement between all and two of the clusters, this section addresses the most prominent gaps (i.e. room for improvement) that

only appear in the top-ten ranking of cluster 1. Table 4.13 shows that cluster 1 has four individual gaps, namely 'expectation setting', 'internal promotion', 'post-launch evaluation', and finally 'customer training'.

The first distinctive feature here is that all individual gaps belong to the 'launch stage' of the NSD-process. Companies belonging to the first cluster consider marketing efforts to be very important (high importance for each factor; see Figure 4.8). However, with regard to implementation of these factors, participants highlighted significant deficiencies.

First, it seems that companies in cluster 1 have problems clarifying the significance and potential advantages of a new service offer. This issue refers to internal and external stakeholders. In terms of internal dimensions, the participants belonging to this innovator type stated that there is still some potential to better motivate front-line employees in order to support new services ('internal promotion': large gap = 0.95). As disclosed above, cluster 1 is more dominated by large enterprises. We estimate that lack in motivated front-line staff could be traced back to the limited possibility to coach and motivate each employee evenly. This assumption, however, should be backed up by qualitative follow-up interviews.

With respect to external deficiencies, type 1 innovators mentioned that they currently struggle in establishing realistic expectations for newly introduced services in customers ('expectation setting': large individual gap = 1.26). We assume that further marketing activities are required to better establish customer's expectations. The characteristics of cluster 1 have exposed that the majority of companies are operating in the 'financial service' and 'insurance' sector, which classifies them as 'service shop'. As these types of companies offer services with a large

variety, it might be complicated to keep the whole product range transparent for employees and customers.

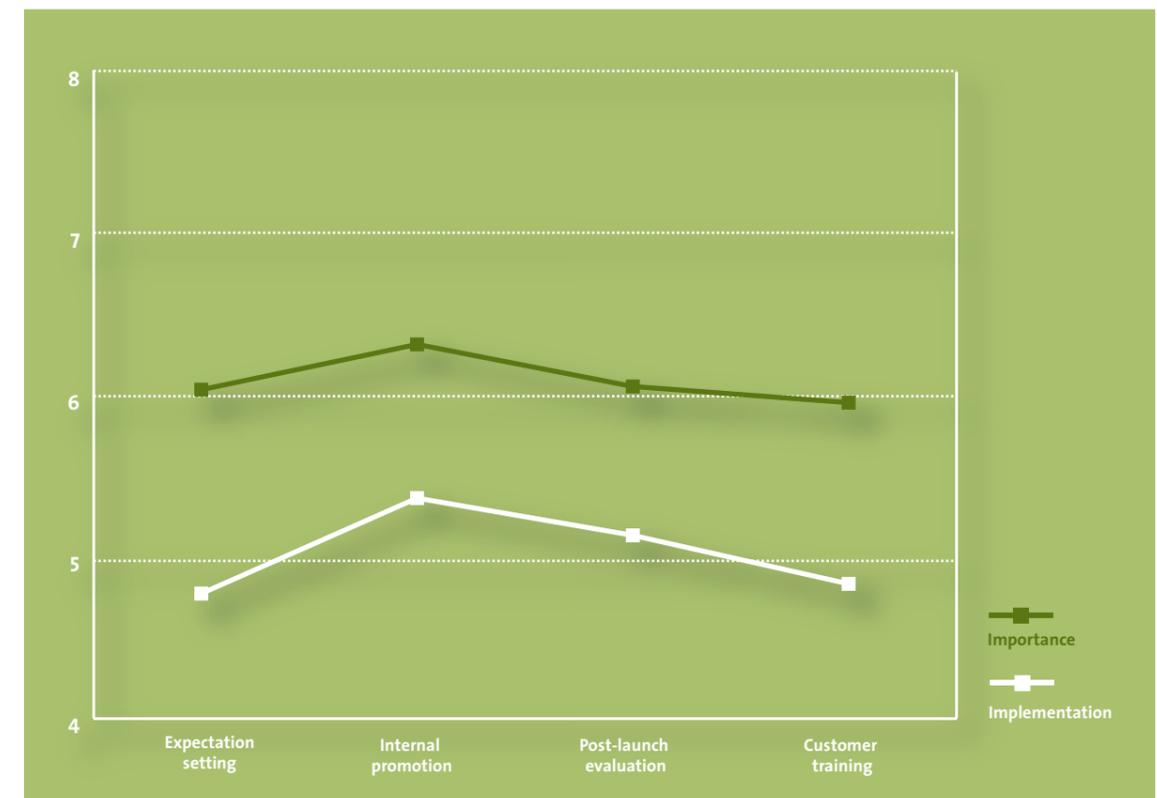
We furthermore suppose that this complexity is also affecting the lack in training customers how to use newly introduced services (factor: 'customer training'). The

service sector is highly dependent on customer interactions (e.g. de Jong & Vermeulen, 2003; de Jong et al., 2003). Motivated front-line employees thus demonstrate an essential component in order to educate the customer with new services; especially if they are dealing with

Table 4.13 Details on prominent individual gaps type 1

Rank	Factor	Subcategory	Opportunity	-	o	+
1	Expectation setting	Process – Launch Stage	7.38	2	16	21
2	Internal promotion	Process – Launch Stage	7.31	1	17	21
3	Post-launch evaluation	Process – Launch Stage	7.23	5	17	17
4	Customer training	Process – Launch Stage	7.17	2	13	21

Figure 4.8 Gap-analysis innovator type 1





complex service products as in this case (e.g. financial or insurance products). For this reason it might be possible that both of the individual gaps ‘internal promotion’ and ‘customer training’ are closely linked to each other. Further qualitative in-depth interviews should also help to clarify the correlations of services displaying a large variety (i.e. ‘professional services’ and ‘service shop’) and factors such as employee motivation and customer expectations.

Moreover, the gap-analysis (Figure 4.8) shows that participants hold the view that there still remains room for improvement in terms of performance evaluation after market launch. Even though participants acknowledge ‘post-launch evaluation’ as an important performance-controlling tool, this factor was not considered appropriately implemented. Given this lack, we assume another possible correlation with the gap in ‘expectation setting’. We deduce that an inefficient measurement of performance does not report dissatisfaction of the customer to a company. Therefore, this could be responsible for the occurring deficiency in creating customer expectations.

**(4) Prominent individual gaps type 2**

In the second company cluster (innovator type 2), three prominent individual gaps were identified, as listed in Table 4.14. In contrast to cluster 1, all individual gaps belong to subcategories dealing with resources. The most prominent gap is a lack of qualified employees available for the project. Indeed, this factor (i.e. ‘sufficient human resources’) indicates the largest room for improvement among the cluster’s individual gaps (gap = 0.97). The analysis of cluster characteristics show that a large portion of companies in cluster 2 are classified as ‘service shop’ and ‘professional service’ (e.g. ‘consulting’ and ‘computer, IT & internet’ respectively). These kinds of services cannot easily be standardized due to the high degree of variety of their service products. Thus, it might be difficult for the human resource management to gain skilled employees. A second explanation could be that sufficient skilled workforce does exist, but not enough people are ascribed to the project. This point should be addressed by further research.

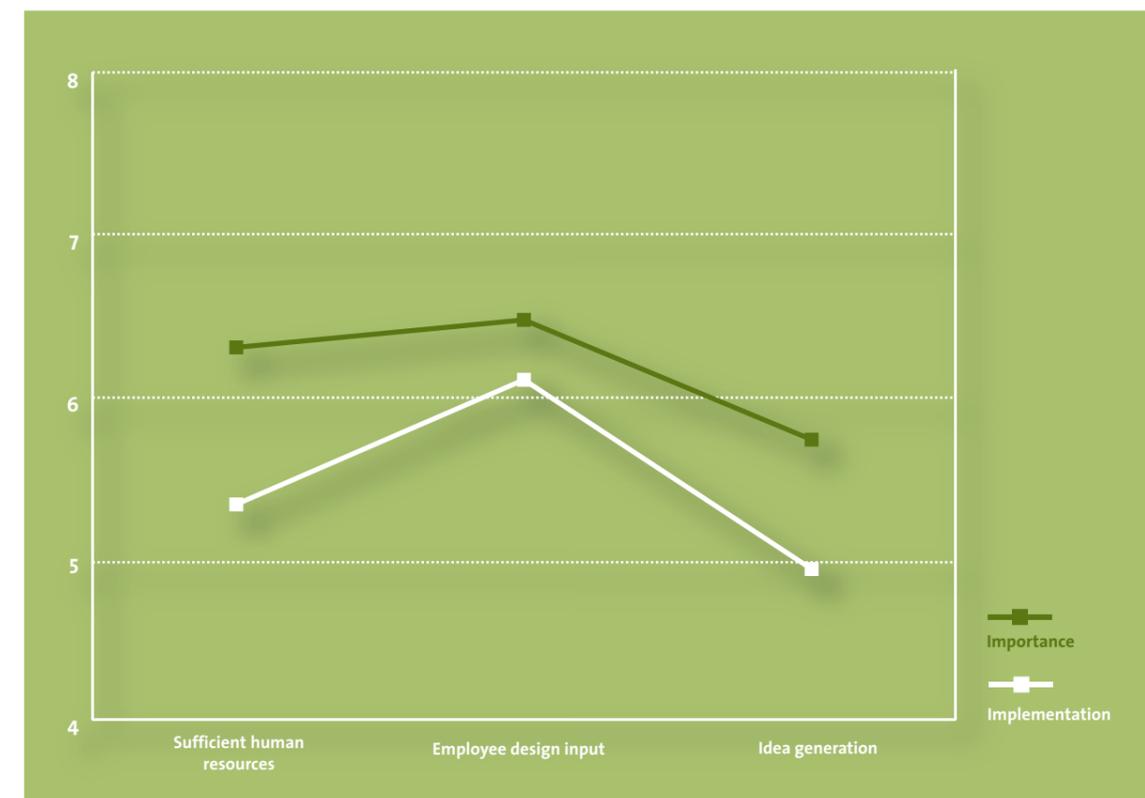
Moreover, this type of innovator reveals complications in their idea management. Although participants highlight the importance of an effective idea management for service innovations, they consider this resource not sufficiently addressed. While idea input by own employees was considered rather well addressed (see Figure 4.9: ‘employee design input’ highly important but a small gap), there seems to be a need for particular methods of generating new service ideas (gap = 0.80). We assume that this issue is linked to two characteristics of cluster 2 companies. First, companies in this cluster tend to be more radical when it comes to innovation. Apposed to incremental changes, radical innovation can not be planned systematically from conception until launch and tends to be developed in a more discontinuous and unpredictable. Scholars have shown that radical innovation needs freedom – formality can slow down the process (Kumar et al., 2000). Therefore, a formal structured process in this case is not suitable in order to create new ideas (von Stamm, 2008). Instead, innovators of type 2 should try to build an environment within their organization that supports the development of radical new ideas. Issues linked to radical innovation have been discussed by previous contributions that recommended several measures to enhance the probability of radical innovations (e.g. Kumar et al., 2000).

The second possible explanation of the issue could be linked to company size. Cluster 2 comprises a large amount of large-sized organizations. Steep hierarchical structures as existing in many large organizations can lead to a higher degree of bureaucracy (Ekvall, 2002:107). This is because ideas and concepts need to overcome more barriers compared to SMEs until the project can actually start.

**Table 4.14** Details on prominent individual gaps type 2

Rank	Factor	Subcategory	Opportunity	-	o	+
1	Sufficient human resources	Resources – Physical	7.27	0	15	15
2	Employee design input	Resources – Intellectual	6.90	1	21	8
3	Idea generation	Resources – Intellectual	6.80	2	13	15

**Figure 4.9** Gap-analysis innovator type 2





### (5) Prominent individual gaps type 3

Innovator type 3 has five individual gaps: 'customer focus II', 'pre-launch testing', 'sufficient funding', 'customer design input' and 'development champion'. For this cluster the involvement of customers from an initial stage onwards seems to be of particular importance. Whereas participants stated that they already focus on meeting customer's needs starting at an early stage (small gap for 'customer focus II'; see Figure 4.10), there is still some potential to intensify the 'customer design input' prior to and during the initial conceptualization phase. Further research should clarify this controversial relationship between knowing about the importance of addressing customer's needs and struggling with the actual customer design input.

The most prominent gap forms the factor 'pre-launch testing'. Therefore, we conclude that testing and "debugging" technical errors prior to the launch should be improved by companies belonging to this type of innovator.

Next, the results demonstrate that the availability of 'sufficient funding' seems to be an issue for companies in cluster 3. This could be explained by a high amount of SMEs in cluster 3. For SMEs, access to funds is oftentimes more difficult (OECD, 2007:11). Furthermore, cluster 3 contains by far the 'youngest' enterprises. The average founding year is 1985 compared to 1959 (cluster 1) and 1904 (cluster 2). This fact could also explain the results, as banks tend to be rather cautious lending money to non-established enterprises (Root & Koenig, 1998; Wunderlich, 2007).

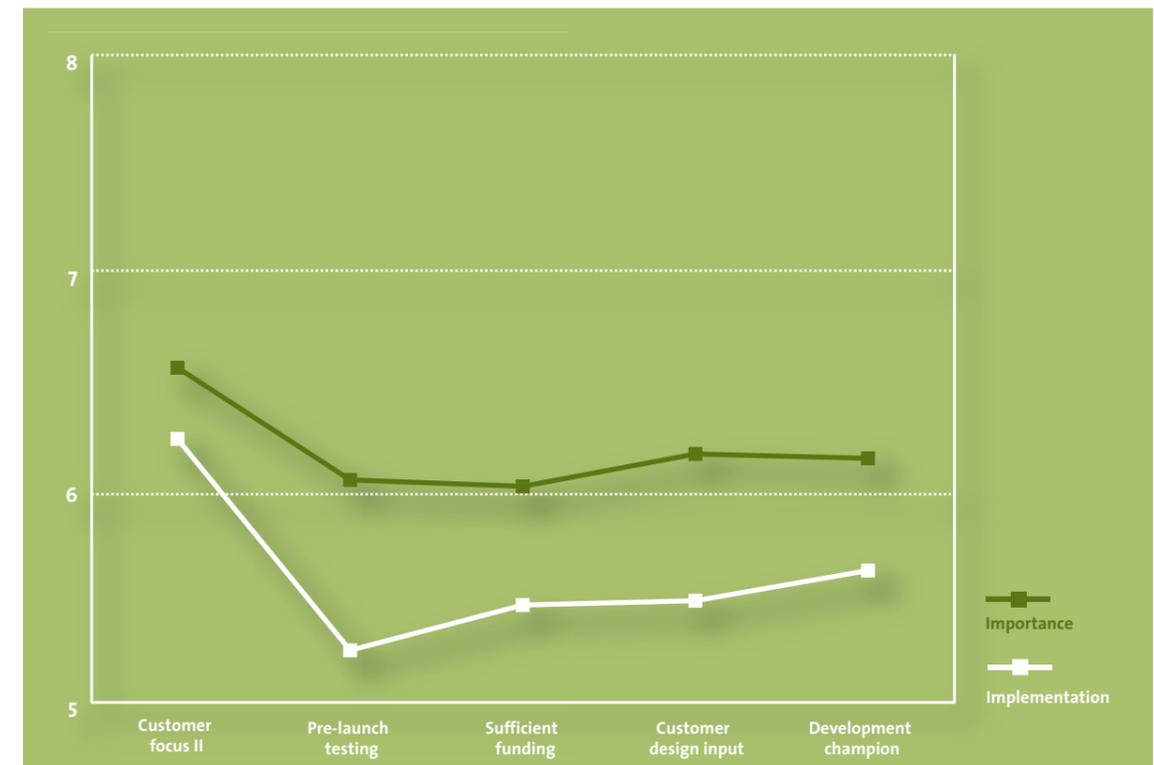
Finally, the results demonstrate that the existence of a development champion was considered to be highly important (importance = 6.13; compared to 5.28 and 5.48

for cluster 1 and cluster 2 respectively). We assume that there could be a link to the fact that companies in cluster 3 are predominantly run by the owner(s). The qualitative interview during the data collection phase (already mentioned above), pointed out that the former owner possessed the role of a development champion within the organization. However, further research should clarify the relationship of company size, company management structure and existence and importance of development champions within the service industry. Forthcoming research should investigate 'who' actually is development champion when it comes to service innovation as this does not necessarily have to be the founder or CEO (Gemünden & Hölzie, 2005:461). Studies are needed to clarify whether prior findings are applicable to new service development (e.g. Rothwell, 1975; Maidique, 1980).

Table 4.15 Details on prominent individual gaps type 3

Rank	Factor	Subcategory	Opportunity	-	o	+
1	Customer Focus II	Process – Design Stage	7.03	3	20	9
2	Pre-launch testing	Process – Development Stage	7.00	2	14	17
3	Sufficient funding	Resources – Physical	6.97	5	16	12
4	Customer design input	Process – Design Stage	6.97	2	15	15
5	Development champion	Resources – Organizational	6.97	4	16	11

Figure 4.10 Gap-analysis innovator type 3





### 4.2.3 Summary of clusters

Table 4.16 summarizes the results of our in-depth analysis of different types of innovators. In order to typify the tendencies discovered in our sample, we attributed a label and a 'face' to each cluster:

**The 'Conservative':** The first cluster is rather 'conservative' in terms of innovation. First, this cluster demonstrates a certain type of attitude towards innovation: cluster 1 scored moderate in terms of 'innovation orientation'. Second, a large portion of the companies belong to rather conservative service industries such as finance and insurance. Third, learning from our in-depth analysis and the figures in Appendix F, cluster 1 has most room for improvement (number of large gaps = 33). Virtually all steps in the NSD-process and all resources urgently require action. The most prominent individual gaps, however, are related to the 'launch stage'. This means that cluster 1 should gain more competencies in marketing, human resource management and controlling.

**The 'Innovator':** We labeled the second cluster the true 'innovator'. Companies strongly commit themselves to innovation and furthermore introduce radical new service offerings. A large portion of factors necessary for a successful development of new services is already addressed well (number of small gaps = 24). The strength of this cluster, namely radicalness, at the same time leads to most of the weaknesses regarding NSD. For instance, cluster 2 faces issues when it comes to the generation and evaluation of ideas. Furthermore not enough qualified employees are ascribed to the project and new service products are launched hastily (gap in 'market confirmation' – refer to Appendix F). The 'innovator' should reengineer the organization of the innovation process. Companies can adopt ideas already applied in the manufacturing industry such as e.g. 'skunk works' or 'creative abrasion' (Kumar et al., 2000). Following approaches from leading manufacturing companies having decades of experience with respect to the management of radical innovation could be useful and beneficial to companies belonging to cluster 2.

**The 'Entrepreneur':** The third cluster was dubbed 'entrepreneur'. We decided to call these companies 'entrepreneurs' because companies tend to be run by the owner(s) and be rather small or medium in size. Companies of cluster 3 have a high innovation orientation and typically innovate in an incremental way. We furthermore checked the average age of companies in this cluster. Cluster 3 contains by far the 'youngest' enterprises. The average founding year is 1985 compared to 1959 (cluster 1) and 1904 (cluster 2). It can be assumed that in most of the companies the 'start-up spirit' is still alive. The 'entrepreneur' scores high in terms of innovation orientation, however, this cluster still has some issues that should be addressed. A large percentage of gaps leave moderate room for improvement (number of moderate gaps = 21). Companies in cluster 3 should take actions in order to improve their networks (particularly regarding the 'design stage': namely 'alliance design input' and 'customer design input'). They furthermore have to improve steps that confirm marketability and acceptance of a new service ('market research', 'pre-launch testing', market confirmation').

Table 4.16 Summary of different types of innovators

	Cluster 1	Cluster 2	Cluster 3
<b>Label</b>	"The Conservative"	"The Innovator"	"The Entrepreneur"
<b>Profile</b>			
<b>Innovation leader</b>	moderate	high	high
<b>Innovation culture</b>	moderate	high	high
<b>Radicalness</b>	low	high	low
<b>Readiness to assume risk</b>	moderate	high	high
<b>Taxonomy</b>	'service shop'	'service shop' & 'professional services'	'professional services'
<b>Industries</b>	'finance & insurance'	'consulting'; 'computer, IT & internet'	'consulting'
<b>Company size</b>	medium to large	medium to large	small to medium (SMEs)
<b>Run by</b>	Management	management or owner(s)	owner(s); large portion of hybrid type
<b>Customers</b>	B2B but large proportion of B2C	B2B	B2B
<b>Turnover</b>	all categories (concentration on bottom and top)	all categories	lower third of scale
<b>Founding year</b>	1959	1904	1985
<b>Room for improvement (No. of gaps)</b>	2	24	19
	11	13	21
	33	7	5

## 5.1 Summary and discussion

The main objective of our study was to evaluate new service development practice in the service sector. We aimed to contribute new knowledge by addressing several research gaps identified. Table 5.1 briefly summarizes the main findings of our investigation.

First of all, we found that all factors listed in the conceptual framework (see section 2.3) were rated at a significant level ranging from 4.86 to 6.54. This consequently verifies that both steps and resources reported by Froehle and Roth (2007) to be significant preconditions for successful NSD activities were acknowledged by the survey participants. Furthermore, we found that 'sufficient time' was mentioned as one of the most prominent gaps even though it was not included in the original framework of Froehle and Roth (2007).

With regard to our findings for all industries presented in section 4.1, we identified that almost every process step and resource was evaluated as not sufficiently implemented to the degree required. This means that nearly all factors leave room for improvement (gaps from -0.12 to 1.32). In fact, we determined only one factor that was considered as over implemented (importance < implementation), namely 'project authorization'. This forebodes a high degree of formalization in some of the companies surveyed. Prior investigations found that strongly formalized NSD activities are often seen as counterproductive and impeditive in terms of innovation (e.g. Menor & Roth 2008; Camacho & Rodriguez, 2005).

Our survey participants moreover ascribed particular importance to human resource related factors. Each factor dealing with human resources (e.g. 'staff training', 'employee motivation', and 'internal promotion') was considered highly relevant by the participants. This appraisal corresponds with findings from prior research which strongly emphasized the significance of front-line employees to a new service offering's success (e.g. Berry et al., 2006; Dolfisma, 2004)<sup>1</sup>.

<sup>1</sup> Also see: de Jong & Vermeulen, 2003; de Jong et al., 2003.

All in all, we demonstrated that the (1) 'design stage' was given the greatest importance compared to the other stages, closely followed by the (2) 'launch stage', (3) 'analysis stage' and eventually the (4) 'development stage'. The largest room for improvement (i.e. largest gaps between importance and the actual implementation) of all process stages can be found in the 'development stage' and the 'launch stage'.

Throughout the whole NSD-process, participants evaluated (1) the 'strategic definition' (importance: 6.54), (2) 'staff training' (importance: 6.41), and (3) 'customer focus II' (importance: 6.32) as the most important steps. The largest rooms for improvement (i.e. largest gaps) offer, in turn, (1) 'process flowcharting' (gap: 0.97), (2) 'market confirmation' (gap: 0.87), and (3) 'expectation setting' (gap: 0.72). With respect to the 'analysis stage', participants considered 'financial analyses' more important in comparison to 'market analyses', whilst the latter leave more room for improvement.

The most important resources were ranked as follows: (1) 'employee motivation' (importance: 6.48), (2) 'managerial support' (importance: 6.40), and (3) 'employee design input' (importance: 6.32). The perceived largest room for improvement lies within (1) 'sufficient time' (gap: 1.32), (2) 'reward structure' (gap: 0.85), and (3) 'team development' (gap: 0.84).

In addition, we discovered that the factor 'managerial support' has demonstrated to be influenced by the participant's functional position and therefore their subjective assertions. The top management mostly rated the gap concerning this factor on average lower than participants from other functional areas. We therefore expect the 'managerial support' gap to be larger. This finding shows that a participant's hierarchical and functional position has an influence on the results of a survey. This so called 'key informant bias' of self-administered questionnaires was already proven by prior research and is a limitation to our findings (Hauschildt & Salomo, 2007; Dömötör, et al., 2007; Ernst, 2001).

Our hierarchical cluster analysis (see section 4.2.1 and 4.2.3) helped us to identify three distinctive 'types

Table 5.1 Business summary

Chapter	Referring to	Finding
2.3	Conceptual framework	- Verification of conceptual framework – all factors rated at a significant level of importance (4.86 to 6.54) - Most prominent gap 'sufficient time' was not included in the original framework
4.1	All industries	- Room for improvement in almost all process steps and resources (gaps from -0.12 to 1.32) - Only one negative gap (importance < implementation); all other gaps positive (importance > implementation) - Human resource factors highly important
4.1.1	All industries - process	- Order of process stages by importance: (1) 'design stage', (2) 'launch stage', (3) 'analysis stage', (4) 'development stage' - Largest room for improvement indicated by the 'development' and the 'launch stage' - Most important steps of NSD-process: (1) 'strategic definition', (2) 'staff training', (3) 'customer focus II' - Largest gaps in the NSD-process: (1) 'process flowcharting', (2) 'market confirmation', (3) 'expectation setting' - 'Analysis stage': importance of 'financial analyses' higher than 'marketing analyses' – but room for improvement larger for the latter
4.1.2	All industries - resources	- Most important resources: (1) 'employee motivation', (2) 'managerial support', (3) 'employee design input' - Largest gaps in resources: (1) 'sufficient time', (2) 'reward structure', (3) 'team development' - Key informant bias discovered: gap regarding 'managerial support' expected to be distinctly larger
4.2.1	All clusters	- Three distinct types of innovators identified - Possible correlation between a service firm's innovation orientation and management organization (owner vs. manager) identified - Innovation patterns less depending on industry (all types across industries)
4.2.2	Individual clusters	- Room for improvement differ among clusters (cluster 1 = large; cluster 2 = small; cluster 3 = moderate) - Large room for improvement in common: 'sufficient time', 'strategic definition', 'staff training' and 'employee motivation' - Cluster 1: need for action in all stages and resources - Cluster 2: improve organization of radical innovation - Cluster 3: needs to improve networking, funding, market confirmation



of innovators' namely: 'the conservative', 'the innovator', and 'the entrepreneur'. With particular focus on our three clusters, we identified a possible correlation between a service firm's innovation orientation and management organization. According to our findings, we assume that companies run by the owner(s) have a different attitude towards innovation than management-led companies. However, this guess should be examined in more detail through qualitative follow-up interviews (see: further research). The industry belonging of companies, in contrast, does not seem to have striking effects on innovation patterns, which positively correspond with the findings of Hipp et al. (2000).

The three clusters essentially differ to the degree that improvements towards innovation practices are required. Whereas cluster 1 indicates the largest room for improvement for the entire process and resources, cluster 2 (few large gaps) and cluster 3 (moderate level) comparatively perform better (refer to Appendix F). However, we identified four prominent factors which all clusters had in common, namely 'sufficient time', 'strategic definition', 'staff training' and 'employee motivation'.

With regard to individual aspects of each cluster, we found that cluster 1 has to improve their performance in all stages and resource categories. Companies falling into cluster 2 require improvements in their organizational structure to better suit radical innovation. Cluster 3 finally lack in networking capabilities, funding and market confirmation (refer to summary in section 4.2.3 and Appendix F).

We estimate that the findings present a good picture of service innovation patterns in Germany. However, our study faces methodological limitations like most prior investigations. Due to the appliance of non-probability sampling methods as well as questionnaires self-administered by key informants and self-selection bias through firms we cannot claim full representativeness of our data.

## 5.2 Recommendations and conclusion

### 5.2.1 Recommendations to managers

Critics claimed that prior studies dealing with factors influencing the success of a firm's innovation activities lack practical usage (Nicolai & Kieser 2002). In order to work towards closing this gap, we provide some recommendations to firms in the service sector.

First, companies can use our questionnaire as a diagnostic tool for improving their innovation efforts. This allows the management to benchmark the company's own process and resources against best-practice (i.e. own ideal of importance rating) or our overall results. We proved that all factors gathered here are in average statistically relevant. When following the list of factors provided by our report, companies should be able to identify the most urgent need for action.

In addition, Table 5.2 contains further recommendation for course of action regarding the most prominent factors. The crosses in columns two to four indicate which measure is recommended to each type of innovator. For instance, all three types of innovators should ascribe more time to innovation matters. One solution could be a regular meeting ("jour fixe"; fixed date), once a week or once a fortnight only dedicated to innovation related topics. Employees involved in the development of new services have the opportunity to talk about new ideas. In case of a running project, employees can be sure that the right contact person (e.g. CEO) is available and present at this particular time in order to answer urgent questions or double-check decisions.

Table 5.2 Recommendation for companies' management

Factor	1	2	3	Recommendation (examples)
Sufficient time	x	x	x	Regular meeting of all employees involved in NSD ("jour fixe" once a week / fortnight)
Strategic definition	x	x	x	Defining goals according to own competency (SWOT); definition has to be realistic and specific (SMART principle)
Staff training	x	x	x	Large- and medium-sized: organizations: regular workshops in headquarters (inviting front-line staff for briefing); web-based training (e-learning); Small: better / earlier involvement in development process
Employee motivation	x	x	x	Employee satisfaction surveys; more responsibilities, involvement and decision-making power; suggestion system and 'innovation contests'
Lines of responsibility	x	x		Project management software; make available documentation of lines of responsibility
Managerial support	x	x		Create a 'vision' – increase commitment; allow mistakes; make available venture capital for risky innovation project
Internal communication	(*)	x	x	Cross-functional project teams; regular meeting of all employees involved in NSD ("jour fixe" once a week / fortnight); web based innovation portal (communication platform; exchange of ideas)
Expectation setting	x			Customer satisfaction surveys; customer reclamation system; apply appropriate marketing tools based on analyses
Internal promotion	x			Incentive system; more involvement during development stage (identify themselves with product); more decision-making power and flexibility (recommendation to customer based on own assessment; not forced by headquarters)
Post-launch evaluation	x			Implement controlling tools e.g. customer satisfaction survey; performance measurement
Customer training	x			Sales seminar for frontline-staff; lead user workshops; educating promotion; hotline; online-support (chat)
Sufficient human resources <sup>1</sup>	(*)	x		1) Human resource activities e.g. campus scouting, head hunters, etc. 2) Apply project management software to better allocate employees
Employee design input		x		Creativity workshops, suggestion system, brainstorming, etc.
Idea generation	(*)	x		Use internal and external sources (involving suppliers, customers, partners e.g. universities, etc.): creativity workshops, suggestion system, brainstorming
Customer focus II			x	Customer satisfaction surveys; customer involving
Pre-launch testing			x	Lead user workshop; test market (selected group/subsidiary)
Sufficient funding	(*)		x	Business angels (venture capitalists); alliance, strategic partner, joint venture
Customer design input			x	Customer satisfaction surveys; lead user workshop
Development champion	(*)		x	Appointment of an innovation manager; incentive system; appreciation by top management

x = appeared in top ten ranking of cluster  
 (\*) = appeared not in top ten list but should be addressed due to large gap (see Appendix F)



### 5.2.2 Recommendations to academics

Tables 5.3 and 5.4 summarize topics that require further investigation. Two kinds of questions arose from our empirical investigation. First, questions which should be addressed through follow-up interviews with participants of our survey. This includes details on some controversial findings as well as clarification of assumptions we pointed out (for details refer to Table 5.4 and the relevant chapter). Second, our contributions led to new topics for further research. We briefly discuss which questions forthcoming empirical studies should address (also refer to Table 5.3).

We first recommend a discussion of our questionnaire applied. Efforts should be made in order to make the questionnaire also applicable to the manufacturing industry. This step towards a 'synthesis approach' is needed given the increasing importance of service offers in the manufacturing industry (Dolfsma, 2004:320 Kandampully, 2002:20; Spohrer & Maglio, 2008:238). Given the high relevance of human resource factors as well as the ambiguity related to the factor 'sufficient human resources', further investigations should include 'staff recruiting'. This factor was recommended by Froehle and Roth (2007) but omitted in our survey (see section 2.3 and Appendix A). Moreover, questionnaires with multi-item measurement scales as put forward by the authors (Froehle & Roth, 2007) should be tested.

Second, further research should clarify the possible correlation identified between innovation orientation and management organization. Questions should be addressed such as: does the attitude towards innovation depend on whether a company is run by the owner(s) or a management team? Is the correlation explained better by company size? Which of the variables is dominant, which is moderating? Does age of the company (i.e. 'start-up spirit') have an influence on the results?

Related to the recommendation above, further research should investigate the role of a development champion. We assume that different types of champions exist in the service sector. Furthermore, we estimate that this existence could strongly be linked to whether a company is run by the owner(s) or a management team.

Forthcoming research should also address two prominent organizational issues. First, the factor of 'sufficient time', which showed the largest gap by far, but was not included in the original conceptual framework. Research is needed on how to make way for innovation within service organizations. Second, little is known about the idea management in service organizations. Here, questions such as 'How important is formalization in generating and evaluating new service ideas?' and 'Are traditional concepts applicable to service firms?' need to be asked.

### 5.2.3 Conclusion

The world is shifting from a traditionally product-focused to a service-dominated society (Meffert & Bruhn, 2009:457; Spohrer & Maglio, 2008:239). Even for economies with a long tradition in manufacturing, such as Germany, the topic of service innovation has gained in importance (Hipp et al. 2000:418). However, the body of knowledge is dominated by research focusing on the manufacturing industry (e.g. de Vries, 2004:4; Tether, 2005:154). This is because research in the field of innovation was traditionally linked to technological innovation. Even though recent studies (e.g. Tether, 2005:182; Miles, 2008:126) have shown that many service firms and service industries are highly innovative, comparatively little is known about innovation patterns in the service sector (e.g. Dolfsma, 2004:319; Jiménez-Zarco et al., 2006:265; Droege et al., 2009:131).

Our study has contributed new knowledge to a number of different research issues. First, we have increased the overall understanding of innovation patterns in the service sector using the example of German service firms. We have shown that many German service organizations engage themselves in innovation projects. Second, we identified the most prominent gaps between current innovation patterns and best practice. Third, we discovered different types of innovators across industries and company size. Forth, we discussed room for improvement in the innovation patterns of each innovator type. Fifth, we provided recommendations to the management of service firms in order to improve innovation performance. Sixth, we discovered possible topics for further research such as

a potential correlation between management organization and innovation orientation. Seventh, we tested and verified the integrated conceptual framework of Froehle and Roth (2007).

Following a 'demarcation approach', our investigation aimed to reduce the imbalance of knowledge in the field of innovation. In summary, product innovation no longer

sufficiently contributes to a firm's competitive advantage and growth potential (Shelton, 2009:38). In fact, "services are becoming more manufacturing-like [...] and manufacturing more service-like" (Miles, 2007:263). We therefore call for a first attempt towards a 'synthesis approach' by applying our questionnaire to service innovation in the manufacturing industry.

Table 5.3 Recommendation for scholars (areas of further research)

Chapter	Referring to	Further research
2.3	Conceptual framework	- Conceptual framework should be adapted and tested in both industries (suitable for service and manufacturing – towards a 'synthesis approach') – eventually: multi-item measurement
4.1.1	'Sufficient time'	- Most prominent gap; however not included in the original conceptual framework; more research should focus on the issue
4.1.2; 4.2.2 (4)	'Idea evaluation & generation'	- How does the idea management work within the service sector? Traditional concepts applicable? Are concepts and processes less formal?
4.2.1	Run by	- Is the innovation orientation strongly correlated with the fact whether a company is run by a management or the owner(s)?
4.2.2 (5)	'Development champion'	- Role of 'champion' in the service sector (prior findings applicable or own concepts needed?); Relationship of company size, company management structure and existence and importance of development champions within the service industry

Table 5.4 Investigation topics for follow-up interviews

Chapter	Referring to	Further research
3.3	Questionnaire design	- Follow-up interviews to check whether negative gaps (e.g. 'strategic definition', 'employee motivation', etc.) occurred due to methodological error
4.1.1	'Process flowcharting'	- Findings controversial: least important factor, second largest room for improvement. Clarify relationship between service blueprinting an main type of customer
4.1.2	'Reward structure'	- Clarify by qualitative interviews if incentive system is unimportant – if acknowledged can be excluded for further research
4.2.2 (3)	'Employee motivation'	- Reasons for lack in employee motivation (cluster 1). Issues related to company size?
4.2.2 (3)	'Post-launch evaluation' & 'Expectation setting'	- Does the lack in post-launch controlling cause an issue in expectation setting? Companies might not know what they do wrong / what customers want?
4.2.2 (3)	'Internal promotion' & 'customer training'	- Correlation of motivating staff and customer training – measuring the importance of this relationship
4.2.2 (4)	'Sufficient human resources'	- What are the reasons for the lack of sufficient human resources (cluster 2)? Linked to recruiting or allocation?
4.2.2 (5)	'Customer design input'	- Why did participants (cluster 3) rate 'customer focus II' as highly important but barely involve customer during the design stage?
4.2.2 (5)	'Sufficient funding'	- How can 'start-ups' and SMEs (cluster 3) better raise funds? How can the problem be solved in the conservative German banking sector?

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# Appendices

## Appendix A: Refinement of the conceptual framework

The following refinements and adjustments have been made to better suit the purposes of our research:

- (1) First, we changed the order of selected factors. We set up the process steps in a chronological order and discussed the new setting with experts during the questionnaire testing. This was carried out in an attempt to an order more logical to the reader.
- (2) Second, we split up the factor 'customer focus' into two items. This was done because of the nature of the German language. We estimate that the elements of this item are (1) meeting needs of customer (2) specific customer (or market segment) (3) initial conceptualization (i.e. at an early stage). Splitting up the factor simplified the paraphrasing into the German language.
- (3) Third, we divided the financial analysis. This was done in order to evaluate the financial viability (i.e. cost-planning of the development project), and economic viability (i.e. profitability expectation of the new service offering) separately.
- (4) Fourth, in order to keep the questionnaire simple and applicable to different sectors we eliminated the factor 'prototyping tools'. We assume that not all sectors apply these kinds of tools and therefore decided to ask for more general testing included in the factor 'pre-launch testing'.
- (5) Fifth, we also eliminated the factor 'staff recruiting'. This decision was a relict from the early stage of our study. Initially, we had planned to interview only small and medium-sized companies. Due to the oftentimes limited budgets of SMEs we assumed

hiring new staff for a new service offer to be the exception rather than the rule.

- (6) Sixth, we reorganized several constructs related to sources for new ideas and internal communication. We eliminated 'diverse creativity' because this factor is already covered by the two factors 'employee design input' (i.e. internal sources for new ideas) and 'external communication' (i.e. external sources for new ideas). The element 'cultivate' links to the existence of an innovation culture within the organization. We asked participants about the existence of an organizational culture and a management comprehension that supports and encourages innovation at a later stage (section C in the questionnaire). Furthermore, we estimate that the elements included in 'diversity appreciation' are: (1) sharing of ideas and knowledge (i.e. communication), (2) across functional boundaries (i.e. cross-functional involvement); 'internal communication' - (3) functional areas or departments involved (i.e. cross-functional involvement) (4) efficient communication (i.e. efficient internal communication); 'team development' - (5) developing the ability of employees to work together effectively (6) in cross-functional NSD teams. We eliminated 'diversity appreciation' in favor of a new factor pointing out 'diversity of internal sources' (i.e. cross-functional input). We combined element (1) and (4) to form the unit 'internal communication'. The cross-functional component (element two, three and six) build the new factor 'cross-functional teams'. Factor 'team development' was reduced to team development activities in general (element 5).
- (7) Seventh, we created a new factor asking whether employees have 'sufficient time' in order to work on the new service development project. According to our experience, it is important to allocate enough time to employees in order to complete additional

tasks. The organization, however, has to assure that the daily operations are not influenced negatively (Ernst, 2002:31).

- (8) Eighth, we split up the general factor 'physical facilities' into a more specific multi-item measurement scale consisting of 'sufficient funding', 'sufficient human resources' and 'sufficient facilities'.
- (9) Ninth, we eliminated 'systems compatibility' as the factor is more process related rather than a physical resource (refer to factor 'technology development').

## Appendix B: Limitations of the study

The procedure mentioned in chapter 3 resulted in the following limitations of our research:

- (1) First, we made use of convenience sampling methods instead of random sampling. This non-probability sampling method makes a generalization of data beyond the sample inappropriate (Struwig & Stead, 2001). Nonetheless, striving for representative results, we included quotas of different industries.
- (2) Second, whilst also being advantageous in some respects, the involvement of several different industries also limits the study to a certain extent. Sectors oftentimes have a different understanding of the innovation concept (Marevelakis et al., 2006). Addressing several industries leads to small amounts of companies represented in each sector. A conclusion for a particular service industry is therefore not

possible. However, researchers found (e.g. Hipp & Grupp, 2005; van Ark et al., 2003) that innovation patterns are less dependent on a particular sector and that different types of innovators can exist across several service industries.

- (3) Third, in order to keep the questionnaire as short as possible we restricted our study to factors from one framework only. In addition, even though the authors (Froehle & Roth 2007) recommended multi-item measurement scales for each factor we basically limited the operationalization (with some exceptions) to a single-item measurement scale.
- (4) Forth, although we included companies of all sizes, not all types are represented equally in the study.

- (5) Fifth, the survey has a key informant bias (Hau-schildt & Salomo, 2007). Only one person per organization filled out the questionnaire. Therefore, results are influenced by a person's opinion. Furthermore, Ernst (2001) showed that key informant bias is a moderating variable. Depending on a participant's hierarchical and functional position, results can significantly differ. We identified for instance one anomaly which can possibly be explained by the overrepresentation of CEOs in our sample.
- (6) Sixth, the methodology chosen implies a self-selection bias. Participants belonging to innovative companies tend to be overrepresented in a self-administered questionnaire. Non-innovative enterprises are oftentimes less willing to respond (Dömötör et al., 2007; Nicolai & Kieser, 2002).

- (7) Seventh, our definition of 'success' was of a subjective nature (i.e. not linked to objective performance measures). The heterogeneity and intangibility of services make it difficult to measure output. We therefore used a subjective definition of success in order to apply the questionnaire to several different industries.<sup>1</sup>
- (8) Eighth, a psychological factor influences the results of our research, as participants tend to recall factors more positively in case a development process was successful, and less positively in case of a failure. This retrospective bias builds another general limitation (Dömötör et al. 2007; Nicolai & Kieser, 2002).

<sup>1</sup> Translation from the German questionnaire: "Please rate the following steps and resources which are necessary in order to successfully develop a new service. We define "successful" a new service offer which is marketable and competitive as well as promising economic success."

## Appendix C: Reliability and validity of data

This section comprises actions which contributed essentially to the overall reliability and validity of our sample. Subsequently, the measures that have been undertaken in order to enhance the quality of data during the data collection process are depicted.

- (1) First, the reliability of prospective participants was expected to increase by mentioning the well known partners including the *University of Applied Sciences Münster*, the *Science-to-Business Research*

*Centre Germany* and the *German Association for Small and Medium-sized Businesses (BVMW)* as references. In addition, one of the samples included members of the BVMW only. Due to the close relationship between the association and its members we presume a high quality of data.

- (2) Second, in our invitation email and at the beginning of the survey we announced the opportunity to request a project report including all important findings of our study. On the one hand, our aim was to motivate potential participants to take part in our survey. On the other hand, we wanted to assure that participants were answering the survey questions in a serious fashion. In order to manage the requests, we set up a separate e-mail account; namely: *'dienstleistungsforschung@fh-muenster.de'* After completing the questionnaire, the email contact was displayed to participants. Overall, we received almost fifty enquiries for the project report.
- (3) Third, in order to emphasize that all responses were examined in absolute confidence and anonymously, we distributed separate access codes to each participant. In doing so, we intended to increase their willingness to respond. Furthermore, we had a better control of data quality and avoided multiple or unauthorized access.
- (4) Fourth, we applied quotas so as to achieve a balanced sample. To further improve validity of the research, the quotas were established on the basis of the service classification mentioned above (2.4). This was done to assure a diversity of different service firms.
- (5) Fifth, during our data collection process we predominantly addressed the companies' CEOs. By doing so, we wanted to make sure that the survey participants

were actually involved in innovation-related decisions. In case the management board was not directly involved, we suggested that they would forward the questionnaire to an expert within the organization. Our intention was to improve the quality and reliability of the answers. The characteristics of our sample indicate that a rather large amount of the questionnaires were in fact completed by the management board, namely 60% of the total final sample.

- (6) Sixth, the survey software applied enabled us to check how long it took each participant to fill in the questionnaire. We later excluded records where participants spent less than twenty seconds on the completion of each question (i.e. subcategory).
- (7) Seventh, the sampling through *www.xing.com* allowed us to directly contact CEOs and experts involved in the development process. This increased the likelihood that a person contacted was actually able to answer our questions correctly. A direct contact furthermore increased the willingness to respond, as our profiles were displayed to participants including personal information such as curriculum vitae, which emphasized the seriousness of our study.

## Appendix D: Ranking of importance (total sample)

	N	Minimum	Maximum	Mean	Std. Deviation
Strategic definition	114	3	7	6,54	0,693
Employee motivation	114	2	7	6,48	0,755
Staff training	111	4	7	6,41	0,857
Managerial support	114	3	7	6,40	0,761
Customer focus II	115	4	7	6,32	0,884
Employee design input	114	4	7	6,32	0,744
Internal promotion	113	2	7	6,28	0,891
Financial analysis I	114	3	7	6,17	0,901
Development motivation	114	2	7	6,11	0,866
Sufficient human resources	112	4	7	6,09	0,833
Internal communication	113	2	7	6,05	1,034
Lines of responsibility	112	2	7	6,04	1,102
Financial analysis II	114	3	7	6,04	0,935
Customer focus I	115	2	7	6,01	1,120
Sufficient time	112	3	7	5,99	0,954
Pre-launch testing	112	1	7	5,99	1,346
Expectation setting	112	3	7	5,97	0,925
External communication	114	2	7	5,96	0,935
Customer design input	113	3	7	5,96	1,064
Customer training	110	1	7	5,95	1,116
Product line analysis	112	4	7	5,94	0,933
Diversity of internal sources	112	1	7	5,91	1,111
Post-launch evaluation	112	3	7	5,91	1,000
Sufficient funding	113	1	7	5,89	1,012
Customer concept feedback	115	1	7	5,81	1,256
Formalized launch	112	2	7	5,72	1,015
Formalized promotion	110	1	7	5,72	1,126
Sufficient facilities	111	1	7	5,69	1,197
Service fail-safing	111	1	7	5,65	1,270
Market research	114	1	7	5,61	1,245
Communication enablement	111	1	7	5,59	1,429
Cross-functional teams	111	1	7	5,59	1,338
Idea generation	113	2	7	5,54	1,239
Development champion	109	1	7	5,52	1,392
Customer interaction	112	1	7	5,52	1,420
Technology development	113	1	7	5,48	1,530
Team development	113	1	7	5,47	1,142
Competitor analysis	114	1	7	5,45	1,402
Back-office development	109	1	7	5,43	1,455
External connectivity	110	1	7	5,41	1,390
Project authorization	114	1	7	5,39	1,572
Market confirmation	112	1	7	5,29	1,443
Multilevel development	112	1	7	5,20	1,368
Alliance design input	115	1	7	5,10	1,366
Idea evaluation	111	1	7	5,05	1,458
Reward structure	113	1	7	5,04	1,460
Process flowcharting	109	1	7	4,86	1,487
Valid N (listwise)	91				

## Appendix E: Ranking of gaps (total sample)

	N	Minimum	Maximum	Mean	Std. Deviation
Gap sufficient time	109	-1	6	1,32	1,660
Gap process flowcharting	109	-2	6	0,97	1,518
Gap market confirmation	112	-1	5	0,87	1,339
Gap reward structure	109	-6	6	0,85	1,704
Gap team development	110	-3	5	0,84	1,392
Gap sufficient human resources	110	-2	6	0,83	1,262
Gap idea evaluation	110	-3	6	0,79	1,703
Gap external connectivity	107	-3	6	0,78	1,556
Gap internal communication	110	-2	5	0,73	1,270
Gap expectation setting	112	-1	5	0,72	1,187
Gap strategic definition	112	-2	6	0,68	1,042
Gap customer training	109	-3	5	0,66	1,172
Gap lines of responsibility	109	-4	6	0,66	1,271
Gap pre-launch testing	112	-2	5	0,65	1,105
Gap sufficient funding	112	-4	6	0,65	1,505
Gap service fail-safing	111	-2	5	0,64	1,212
Gap customer design input	111	-2	6	0,63	1,198
Gap market research	113	-3	6	0,63	1,151
Gap idea generation	112	-3	6	0,62	1,422
Gap back-office development	108	-2	6	0,60	1,346
Gap alliance design input	113	-3	6	0,60	1,366
Gap employee motivation	110	-1	3	0,59	0,902
Gap customer concept feedback	112	-3	6	0,57	1,213
Gap staff training	109	-2	6	0,57	1,158
Gap development champion	107	-4	6	0,55	1,389
Gap formalized promotion	110	-3	5	0,55	1,114
Gap formalized launch	112	-2	6	0,54	1,185
Gap customer interaction	112	-4	6	0,54	1,266
Gap competitor analysis	112	-4	4	0,53	1,266
Gap post-launch evaluation	112	-2	5	0,53	1,335
Gap technology development	113	-2	6	0,52	1,173
Gap internal promotion	113	-2	6	0,52	1,010
Gap development motivation	112	-1	4	0,48	1,004
Gap customer focus I	113	-2	4	0,45	0,964
Gap external communication	114	-2	4	0,44	0,978
Gap diversity of internal sources	111	-2	5	0,43	1,173
Gap communication enablement	110	-3	6	0,42	1,593
Gap product line analysis	111	-2	5	0,40	1,038
Gap customer focus II	113	-2	3	0,36	0,955
Gap cross-functional teams	108	-4	6	0,36	1,164
Gap managerial support	111	-2	4	0,32	0,874
Gap multilevel development	110	-4	3	0,31	1,020
Gap financial analysis II	111	-3	5	0,31	1,227
Gap financial analysis I	113	-4	6	0,30	1,217
Gap employee design input	114	-2	5	0,26	1,040
Gap sufficient facilities	109	-6	6	0,07	1,501
Gap project authorization	113	-5	4	-0,12	1,262
Valid N (listwise)	73				

## Appendix F: Overview gaps by cluster

Process – room for improvement (gap)			
	Cluster 1	Cluster 2	Cluster 3
Strategic definition	0.74	0.63	0.59
Customer focus I	0.54	0.37	0.41
Customer focus II	0.56	0.10	0.31
Customer design input	0.70	0.37	0.69
Alliance design input	0.64	0.47	0.75
Customer concept feedback	0.74	0.30	0.59
Development motivation	0.71	0.20	0.41
Project authorization	-0.03	-0.17	-0.03
Financial analysis I	0.56	0.13	0.19
Financial analysis II	0.37	0.14	0.56
Competitor analysis	0.77	0.30	0.66
Market research	0.74	0.27	0.78
Product line analysis	0.63	0.10	0.39
Multilevel development	0.54	-0.04	0.28
Customer interaction	0.92	0.20	0.27
Technology development	0.69	0.50	0.42
Pre-launch testing	0.63	0.53	0.79
Process flowcharting	1.36	0.93	0.64
Staff training	0.92	0.33	0.44
Service fail-safing	0.87	0.53	0.53
Market confirmation	1.03	0.83	0.91
Formalized launch	0.84	0.50	0.39
Internal promotion	0.95	0.23	0.36
Customer training	1.11	0.45	0.39
Expectation setting	1.26	0.48	0.48
Formalized promotion	0.87	0.53	0.32
Post-launch evaluation	0.92	0.40	0.50

### Room for improvement:

small = < 0.40	moderate = 0.41-0.69	large = > 0.70	negative gap
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Resources – room for improvement (gap)			
	Cluster 1	Cluster 2	Cluster 3
Employee design input	0.54	0.37	-0.09
Diversity of internal sources	0.89	0.31	0.21
External communication	0.79	0.40	0.33
Idea evaluation	1.31	0.93	0.30
Idea generation	0.97	0.80	0.33
Employee motivation	0.82	0.45	0.41
Reward structure	1.54	0.40	0.55
Managerial support	0.55	0.20	0.16
Cross-functional teams	0.61	0.23	0.23
Team development	1.62	0.43	0.44
Internal communication	1.11	0.72	0.34
Lines of responsibility	1.13	0.48	0.39
Sufficient time	1.76	1.52	0.81
Development champion	0.94	0.03	0.55
Sufficient funding	1.00	0.37	0.55
Sufficient human resources	0.95	0.97	0.67
Sufficient facilities	0.03	-0.20	0.33
Communication enablement	0.95	0.17	0.18
External connectivity	1.27	0.69	0.55
Back-office development	1.00	0.07	0.64

### Room for improvement:

small = < 0.40	moderate = 0.41-0.69	large = > 0.70	negative gap
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(Footnotes)

1 Solution for assumption 1) issues in finding qualified employees; 2) issue: not enough qualified employees assigned to the project

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**Autoren:** • Damian M. Leich, BBA, M.A.  
• Dipl.-Betriebsw. Sinan Gökduman, M.A.  
• Prof. Dr. Thomas Baaken

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