



# **Innovation in Service Organizations – The development of a suitable innovation measurement system**

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“It is not the strongest of the species that survive, nor the most intelligent, but the one most responsive to change”

- Charles Darwin

# Abstract

Innovation in services has arisen to be a hot topic of today and being innovative serve as a key in staying competitive in most business settings, the service sector is no exception.

Although important, service innovation is difficult to measure and the service perspective has been noticeably absent in traditional approaches where innovation measurement has tended to focus mainly on products and production related systems. These measurement indicators fail to capture the diversity and intricacy of innovation processes emerging in service firms, where innovation rarely requires R&D. Until now, a coherent instrument or tool for measuring innovation in a service company has not existed resulting in that research studies on service innovation lag behind those of product innovation.

The need for an innovation measurement instrument is obvious as it would not only assist companies in understanding their current innovation practices or capabilities, but would also help clarify what the organization need to focus on to maximize its success. With basis in aforementioned, this study sets out to extend the knowledge regarding factors affecting innovation within the service sector. As a result, a developed and tested questionnaire, suitable for measuring innovation within a service firm is provided and a managerial and theoretical contribution has been made.

Key words: Innovation, service, innovation metrics, measurement, survey, questionnaire

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# 1. Introduction

During the last decades there has been an unprecedented growth of the service sector, a trend particularly strong in advanced economies (Andari et al., 2007; Javalgi & Martin, 2007; Scheler, 2012). The intensified competition in today's dynamic and global world is characterized by technological progress that is often arduous for the individual firm. Sustained competitiveness and firm survival is dependent of the ability of firms to reinvent themselves through innovative strategies (Adams et al., 2006; Antoncic & Hisrich, 2003; Covin & Slevin, 1991; Gallouj & Windrum, 2009; Gapp & Fisher, 2007; Hui-Kuang Yu & Willoughby, 2011; Ling et al., 2008; Scheler, 2012). In recent years, there has been a change of focus and the view has moved from focusing only on tangible output and discrete transactions to a view where intangibility, exchange processes and relationships are key (Vargo & Lusch, 2004). Simply put, this shift toward a service dominant logic moves the focus of value from tangible goods to an exchange of services (Kasouf et al., 2008; Lusch et al., 2008; Vargo & Lusch, 2004 & 2008).

The evolution within the services sector has attracted an increased interest both from a practical and theoretical perspective. In the academia the attention towards the subject has resulted in numerous attempts to better understand the processes and output in service firms. Research has been carried out by various academic disciplines such as organization theory, marketing, operations research, industrial engineering, computer science, and business strategy. The common denominator is the intent to answer questions regarding what the rudiments for fruitful innovation are and how the capability to innovate can be raised by reviewing research on service innovation (Froehle & Roth, 2007; Galbraith, 1982; Goldstein et. al., 2002; de Jong & Vermeulen, 2003; Miles, 2012; Scheler, 2012). Yet, a significant question regarding the capability to innovate is nascent, how does one measure innovation in a service firm?

Unsurprisingly, service innovation is difficult to measure and the service perspective has been noticeably absent in traditional approaches where innovation measurement has tended to focus mainly on products and production related systems (Miles, 2012; Scheler, 2012). Thus, many innovation metrics of today is based on old paradigm of an industrial economy where innovation was viewed as linear following fundamental research, development, prototyping, pilot production, market entry etc. (Gamal, 2011; OECD, 2010). Although useful in manufacturing firms, these measurement indicators fail to capture the diversity and intricacy of

innovation processes emerging from new trends, particularly in the majority of sectors which include services, where innovation rarely requires R&D (Gallouj & Windrum, 2009; Hipp & Grupp, 2005; Simon, 2009). Due to this lack of knowledge, there is a call for more empirical studies contributing with new knowledge and research studies looking at and collecting innovation data in a service context (OECD, 2010)

## **1.2 Problem statement**

Process-oriented settings (service businesses) are fundamentally different from product-oriented ones, mainly due to the fact that services generally are intangible and does not have the same exteriority as a product (Gallouj & Windrum, 2009; Simon, 2009) and according to previous research, the notion of innovation, well established in the manufacturing sector, cannot simply be transposed to the service sector (Hipp & Grupp, 2005). Yet, research studies on service innovation often follow an assimilation approach, transferring findings on innovation generated in the manufacturing industry to the service industry (Droege et al., 2009). Although previous research acknowledges the importance of studying factors influencing service innovation, little scientific knowledge has been gained about the critical resources and activities affecting the innovation process and there is still no coherent instrument or tool for measuring innovation in service companies (Droege et al., 2009; Menor et al., 2002:135; Menor & Roth, 2007:825; Rust & Chung, 2006). As a result, research studies on service innovation lag behind those of product innovation (Easingwood, 1986; Griffin, 1997; Kelly & Storey, 2000; Oke, 2004). The need for innovation measurement instruments is obvious as it would not only assist companies in understanding their current innovation practices or capabilities, but also helps clarify what the organization need to focus on to maximize its success. Indeed, identifying areas of strength to capitalize on, weaknesses to improve, recognizing opportunities for increasing innovation, spreading the awareness of the importance of innovation concept as well as fostering the innovation culture within the organization have all been highlighted by previous research (Gamal, 2011).

Currently, there are some indicators, metrics and measuring guidelines used concerning manufacturing and industrial firms, e.g. the Oslo Manual, but as mentioned the outlook on the service sector is dismal as there is an evident deficiency of suited instruments and measuring tools (Hipp & Grupp, 2005). In a business where measurements on R&D, input/output and patent are difficult to measure or not occurring at all, other indicators needs to be examined and

factors such as soft values, human capital, as well as attitudes and culture needs to be examined. The highlighted research gap is important to investigate further as the bridging could hold valuable knowledge for service firms in order to develop their level of innovativeness (OECD, 2005). With basis in the above mentioned research gap, the aim of this thesis is to extend the knowledge regarding how to measure innovation within the service sector as well as provide a tested questionnaire that can be used by researchers and managers to capture and improve their service innovation output.

### **1.3 Purpose & Research question**

The specific research question in this thesis is: “*Which intangible indicators affect innovation success within service companies?*” More specifically, the purpose and aim is to provide managers with an innovation metrics suitable for companies within the service industry. This will be done by creating a survey by which managers can evaluate their employees perception and attitude towards innovation, explore the extent to which their organization is nominally innovative or whether or not innovation is embedded throughout their organization, and identify areas for improvement (Adams et al., 2006). Further, the survey will provide a comprehensive picture of possible problem areas regarding objectives and strategies concerning innovation development. In doing so, the knowledge provided could be used to distinguish what actions to take to prevail or maintain the status of the company. The survey could also work as tool to take the pulse on a firm to ensure that the attitudes and tendencies affecting innovation are in line with what is desirable. The survey provides a theoretical contribution in the sense that it delivers a tested questionnaire of how to examine innovation processes in service firms, and thus adds to the current research debate bridges the detected knowledge gap how innovations are developed in service firms.

### **1.4 Outline of Thesis**

The current study is structured as follows. First, the introduction and problem statement is presented (section 1), this is followed by a theory section (section 2) where existing scholars are highlighted and discussed in order to understand the service innovation concept in general and more specific in this context. Further, current measurement regarding innovation in service companies is presented followed by an overview of factors enabling and hampering innovations which boils down to seven categories that will be used to create a measurement tool for innovation in service firms. Sequent, the methods section (section 3) follows, where



methodological considerations and data is discussed. After this, the empirical data gathered through one-on-one interviews and exploratory factor analysis is presented (section 4) which is followed by a discussion (section 5). Finally the result of a measuring questionnaire is presented along with a discussion of implications as well as theoretical and managerial limitations and suggestions for further research (section 6).

## **2. The Concept of Innovation**

Entrepreneurial orientation is usually defined as a multidimensional construct, applied at the organisational level, which characterises firm's entrepreneurial behaviour towards methods, practices, and decision-making styles with the aim to create value (Lumpkin & Dess, 1996). One of these constructs is innovation that in research is associated with several definitions in short; the term refers to something new, introduced for the first time (Adams et al. 2006; Aiken & Hage, 1971; Dearing, 2000; Dodgson & Gann, 2010; Galbraith, 1982; Scheler, 2012; Skovvang Christensen, 2005).

In many cases, innovation is regarded a key factor for firm success (Bakhshi et al., 2008; Simon, 2009). It serve to lengthen an existing value chain, improving value for customers or lowering cost and in a business perspective, innovation is concerned with the process of commercialising or extracting value from ideas (Simon, 2009; Rogers, 1998). Hence, one can state that economic and social progress many times depends on new ideas that challenge the introspection and apathy of the status quo and creates opportunities for change and improvement (Simon, 2009). In other words, innovation transpire when new thinking is successfully introduced and valued by organizations (Dodgson & Gann, 2010; Simon, 2009). Galbraith (1982:6) pinpoints the term as “the process of applying a new idea to create a new process or product”, while Simon (2009) suggest that the term is commonly, and foremost, associated with technology and new products. Throughout this thesis, the definition of an innovation draws upon Galbraith's definition, i.e., an innovation takes place when new thinking is successfully introduced and valued by organizations.

A challenge faced by researchers interested in service innovation is the lack of a single, comprehensive, and consistently used structure that defines and unifies the meaning of services (Sampson & Frohele, 2006; Vargo & Lusch 2004). According to Maglio and Spohrer (2008) and Normann (2001) the definition of a service is the application of competences for the benefit

of another and depends on the division of labor and effective co-creation of value, leading to complementary specialization and comparative advantage among participants. Pursuant to Vargo and Lusch (2004:2), a service is defined as “the application of specialized competences (knowledge and skills) through deeds, processes and performances for the benefit of another entity or the entity itself”. Moreover, a string of researchers also emphasizes that a service is a process and relationship, not just as an “intangible good”, i.e., an innovation is communicated through certain channels and amongst participants in a social system over time, which is highly dependent upon four factors influencing the spread of a new idea: the innovation itself, communication channels, time and a social system (Macaulay, 2012; Roger, 2003; Sampson & Frohele, 2006; Maglio, Srinivasan, Kreulen & Spohrer, 2006). Thus, this perspective of what a service is relies heavily on human capital and on the relationships among people. Despite the definition of a service, the extent and nature of innovation can vary, whether it is an incremental or radical change (Dodgson & Gann, 2010). Yet, new ideas are mostly incremental improvements meaning that regardless of occurrence, they are mostly ideas used in new models of existing services (Dodgson & Gann, 2010). Due to this, current research has started to investigate how innovation in services is adequately managed or measured, and the study of innovation in services has emerged as an important research field (Droege et al., 2009).

## **2.1 Measurement of Innovation**

As stated earlier, service innovation is difficult to measure and although much has been written on the subject, very little is actually measured in its true sense and one reason for this is the lack of appropriate measurement indicators (Adams et al., 2006; Gamal, 2011; Hipp & Grupp, 2005; OECD, 2005; Maglio et al., 2006). Today’s measurement techniques and established concept of innovation are still firmly rooted in the study of manufacturing innovation which is not transferable to this setting, thus it is questionable if they are suited for analyzing innovation within economies where service sectors and service functions play a dominant role (Coombs & Miles, 2000). It has been highlighted that there might be a vast difference in the innovation patterns of service firms, and research has therefore called upon a specific approach (empirically and conceptual) that is different from the one used for manufacturing firms which allows for heterogeneity (Hipp & Grupp, 2005).

The innovation literature is fragmented and scholars from diversified disciplinary backgrounds has created a plethora of ontological and epistemological positions to investigate, analyze and

report on this complex and multidimensional phenomenon (Adams et al., 2006). Although a considerable amount of research exists on problems and issues of innovation management and processes in the manufacturing industry, service innovation measurement still remain a complex system of activities (e.g., Afuah, 2003; Drucker, 1985; Gallouj, 1998; Herstatt et al., 2001; Hollenstein, 2001; Kelly & Storey, 2000; Metcalfe & Miles, 2000; Pikkemaat & Peters, 2006; Preissl, 2000).

As with other intangibles, innovation measurement can quickly disappear into murky waters and a ‘one size fits all’ notion may not necessarily apply (Robbins, 2014), thus a new method of measuring and evaluating innovative metrics is justified. Innovation in service firms is often not the result of a scientific research process and classical R&D but rather of more units and project teams engaged in the innovation process. Therefore innovation processes in service firms needs to be handled differently and the specific problems arising from the assessment of innovation activities in the service sector should not be underestimated (Hipp & Grupp, 2005). As mentioned earlier, the R&D measurement concept has proven especially disadvantageous for the service sector since innovation in the majority of sectors which include services, rarely requires R&D (Hipp & Grupp, 2005). Further, the Oslo Manual covers innovation in the business enterprise sector only and concentrates on technological product and process (TPP) innovation. More specifically, it focuses on optional guidelines for other forms such as organizational change in manufacturing, construction, utilities and marketed services, hence the need to extend innovation surveys to the service sector is pressing (OECD, 2005).

A delicate issue arises since service innovation is often immaterial in nature and therefore difficult to protect. This stand in contrast to manufacturing firms where there are well-established statistical programmes for the handling of goods services, such as wholesale and retail trade, freight and transportation. Hence, there are robust measures of production, investment, prices and financial activity for these industries that make it easier to distinguish the differences between innovators and non-innovators and to draw policy inferences. However, for industries not directly related to the handling of goods, the statistical picture, as a background for the measurement of innovation, is less clear (Easingwood, 1986). Further, not all service industries are the same. They require different skills, organize their production and marketing functions differently, make use of different levels of technology and serve different markets. In the OECD report on “Measuring Innovation: A New Perspective” (2010) encouragement is directed to work with measurements and values of intangible assets and thus

also revisit the measurement framework for innovation to identify and prioritise areas for survey design and re-design. Further, OECD (2010) points out that new methods of analysis that are interdisciplinary in nature are necessary to understand innovative behavior in service firms, its determinants and its impacts at the level of the individual, the firm and the organisation. Innovation surveys are increasingly used to better understand the role of innovation on firm performance, its determinants and the characteristics of firm innovativeness as well as the underlying factors of innovation development (OECD, 2010). But, in order to measure innovation indicators at all, knowledge and an underlying understanding about factors driving or hampering innovation in the first place needs to be established. Hence, key actions must be taken to develop interdisciplinary approaches to data collection and new units of data collection as well as an improvement of the measurement of innovative activity in complex business structures, organizations and networks (OECD, 2010.).

## **2.2 Possible Drivers and Barriers of Innovation**

It is commonly known through innovation research that several factors coexists and play important roles in the enabling or hindering of innovation development within a firm (Dearing, 2000; Fortuin & Omta, 2009; Foxon & Pearson, 2008; Ozorhon et al., 2014; Ren, 2009; Scheler, 2012; Sørensen & Torfing, 2011). These factors simultaneously work both as drivers and barriers depending on the specific circumstances at hand, moreover they serve as motives to how an innovation project is perceived and also determines whether or not innovation activities takes place at all (OECD, 2005).

For instance, some researchers argue that the size of an organization is an important matter for the enabling of innovations (Aiken & Hage, 1971; Kimberly & Evanisko, 1981; Scheler, 2012). It is said that larger organizations have better facilities and greater resources, fostering positive effect on innovation due to high technological knowledge and potential. Also, larger organizations allow for the accumulation of resources and are more tolerant to loss due to unsuccessful innovations (Zwick, 2002). Limitations in space could also involve restrictions regarding availability of space with the result of competition for space among innovation activities (Scheler, 2012). On the other hand, Hage (1980) argue that this is not always the case, smaller organizations can have an advantage regarding flexibility and the ability to faster adapt to changes. A smaller workforce can often at a higher pace, implement and accept change more easily than large firms since there are not as many echelons that the decision has to pass through (Damanpour, 1992).

In the quest to innovate, organizations are dependent on their employees' ability to adapt to change (Stanley et al., 2005). In the OECD-list (2005) of enterprise factors hampering innovation, resistance to change is a factor causing stagnation in many firms, thus an important barrier to overcome. The significance of consensus between employer and the employee cannot be emphasized enough. Besides consensus, research on employee resistance against innovation also covers monetary factors, the role of communication, firm values and the role of top management and change agents (Zwick, 2002). Top managers are argued to possess a key role both in terms of enabling and stimulating innovation (Galbraith, 1982; Simon, 2009; Zahra et al., 2000). More specifically, the phenomenon of 'innovation opponents' has been highlighted, which primarily refers to people on managerial positions who slow down or inhibit innovation activities (Scheler, 2012).

Another key factor that play an important role in the innovation process is the firms' organizational design. The organizational design combines structure process, rewards and people in order to become efficient, in other words the ability of organization's to approach innovation activities in a systematic way (Aiken & Hage, 1971; Damanpour, 1992; Galbraith, 1982; Kimberly & Evanisko, 1981; Scheler, 2012). For example, it is important to have an organization that allows an approach in which something can be done for the first time (Galbraith, 1982). A lack of organizational innovation priority, meaning a lack of resources and a lack of structures and routines committed to service innovation, consequently hamper innovation (Scheler, 2012). Further, if strategy and values is shared by everyone, smooth cooperation between functions are enabled and thereby eases and accelerates the innovation process and innovation output (Simon, 2009). Scheler (2012) emphasize the importance of an organization's capability to foster interaction and exchange among members, calling it 'institutionalization of exchange' which is said to stimulate the ability to innovate. However, earlier research show that this is hard to accomplish, employees with different perspectives may come and go, and a company's corporate culture and values are often ingrained in the walls, hence it is always up to the employees to accept and embrace prevailing ambiance or not. A perfect organization fit in terms of shared values is therefore admirable but often hard to accomplish and thus organizational co-operation difficulties is a potential barrier for innovation (Galbraith, 1982; OECD, 2005).

External environment and competition also play a vital role in influencing the process of innovation. Monitoring of environment and competitors serves as a key incentive for businesses

to find new ways of developing their operations and to introduce various improvements in order to increase their revenues, protect their existing advantages, or pursue new opportunities (Kuznetsova & Roud, 2014). This structure of competition is determined by central market forces regarding how specific manufacturers are organized and how the overall sector develops, as well as the emergence of potential competitors and their efforts to produce new products and services (Scheler, 2012). It is of central importance for firms to monitor the presence and activity within the market of suppliers, intermediaries, and consumers etc., otherwise the risk of getting surpassed by competitors may increase and lack of information on markets hampers the innovation process. Other factors such as legislation, regulations and lack of technological opportunity as well as economic factors such as lack of appropriate sources of finance, also hampers innovation (OECD, 2005).

The combination of the abovementioned factors has an immediate effect on the choices service companies make regarding their implementation of innovation and development strategies to maintain their market positions (Kuznetsova & Roud, 2014). Indeed, innovation involves thoughtful preparations, objectives, and planned benefits for new ideas that have to be realized and implemented in practice and thus a possible barrier to innovations is the lengthy period often acquired before reaching full market potential, hence a common problem for many individuals and organizations is how to speed up the rate of diffusion of an innovation (Dodgson & Gann, 2010; Rogers, 2003).

## **2.3 Specific Factors Used in Survey**

It has been widely demonstrated that the perceived work environment, comprising both structural and cultural elements, in theory, makes a difference to the level of innovation in service organizations (Adams et al., 2006; Amabile et al., 1996; Ekvall, 1996) and it is evident that organizational decisions can both encourage and hamper the overall level of innovation (Dougherty and Cohen 1995; Tidd et al., 1997). However, including all possible factors in one single survey may not be possible nor practical (OECD, 2005) hence a selection has been made based upon careful considerations and frequent occurrence in literature (Dearing, 2000; Fortuin & Omta, 2009; Foxon & Pearson, 2008; Hipp & Grupp, 2005; Ozorhon et al., 2014; Ren, 2009; Scheler, 2012; Sørensen & Torfing, 2011). The factors used in the survey are presented in the table below.

**Table 1: Summary of the seven themes used in the survey**

<b>Summary Categories</b>	<b>Previous Research</b>
<b>Culture and Interactions</b>	Strategy and values (corporate culture) and ability to foster interaction and exchange (OECD, 2005; Simon, 2009; Scheler, 2012)
<b>Attitude to Innovation</b>	Individual perception of innovation and employees adaption and/or resistance to change as well as innovation opponents (OECD, 2005; Scheler, 2012; Stanley et al., 2005; Zwick, 2002)
<b>Top Management Commitment</b>	Management understanding and appreciation of innovation activities which enable and stimulate innovation (Galbraith, 1982; Scheler, 2012; Simon, 2009; Zahra et al., 2000; Zwick, 2002)
<b>Innovation Priority</b>	Attitude towards financing, testing and rewarding innovation projects (Dodgson & Gann, 2010; Rogers, 2003; Scheler, 2012)
<b>Systematic Approach</b>	Ability to approach innovation in formally structured routines (Organizational design, structure people etc). (Galbraith, 1982; Scheler, 2012)
<b>Contextual Analysis</b>	Monitor presence and activity in market of suppliers and monitoring of environmental trends and competitors (Kuznetsova & Roud, 2014; OECD, 2005; Scheler, 2012)
<b>Limitations</b>	Restrictions regarding monetary factors as well as size of an organization and limitations regarding space (Aiken & Hage, 1971; Damanpour, 1992; Hage, 1980; Kimberly & Evanisko, 1981; Zwick, 2002)

## 2.4 Summary Theory

The concept of innovation is challenging since there is no single definition or understanding of the matter (Sampson & Frohele, 2006; Vargo & Lusch, 2004). In the last decades, the exchange of services has been increasingly characterized by a dynamic and competitive arena which is of utmost importance to a company's success (Antoncic & Hisrich, 2003; Covin & Slevin, 1991; Gallouj & Windrum, 2009; Gapp & Fisher, 2007; Hui-Kuang Yu & Willoughby, 2011; Ling et al., 2008). This fast and vast progress of the service sector has, however, led to an understanding of how the desirable development and regeneration in it can be done. Due to this, scholars have had to move from a view where manufactured tangible goods, not applicable to services, have been central to a logic where intangibility, exchange processes and relationships are key (Kasouf et al., 2008; Vargo & Lusch, 2004).

The difficulties regarding the measurement of service innovations (Gamal, 2011) is resulting in a lack of appropriate indicators (Coombs & Miles, 2000). Innovation surveys are increasingly used to better understand the role of innovation (OECD, 2010) but it requires an understanding of underlying factors driving or hampering innovation. Once again, the purpose of this thesis is

to provide a survey by which managers can evaluate their firms' innovation level and their employees' perception and attitude towards innovation. Previous research on drivers and barriers are summarized into seven categories which will be used as themes for the survey; *culture and interactions, attitude to innovation, top management commitment, innovation priority, systematic approach, contextual analysis and limitations* (see Aiken & Hage, 1971; Damanpour, 1992; Galbraith, 1982; Kimberly & Evanisko, 1981; Simon, 2009; Zwick, 2002; Galbraith, 1982; Simon, 2009; Zahra et al., 2000; Stanley et al., 2005). Further the survey also holds a theoretical contribution in the sense that it provides a tested questionnaire of how to examine innovation processes in service firms, and in doing so adds to the current research debate and the knowledge gap of innovation development in service firms.

## **3. Research Methodology**

### **3.1 Research Philosophy**

Of the following principles ontology, epistemology and axiology in the current study called for a balanced approach; hence the view of pragmatism was chosen. In short this means that the methods used are those that appears best suited to the research question without getting caught up in philosophical debates about which is the best method approach (Saunders et al., 2009). Pragmatic researchers grant themselves the freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. They recognize that every method has its limitations and that the different approaches can be complementary (Saunders et al., 2009). In this study, the method used is in part qualitative and quantitative with the main purpose to develop a survey instrument that measures the level of innovation in a service firm.

### **3.2 Research Design**

This particular study uses an exploratory research design which, at an early stage of research aims to further clarifies the research problem and determine the direction of the research (Frankfort-Nachmias & Nachmias, 2007; Kumar, 2005; Yin, 2003; Zikmund et al., 2010).. The design is used to create a foundation on which future research can build upon and in addition, it can help clarify uncertain situations and identify potential business opportunities (Zikmund et al., 2010).



Further, the aim of this thesis is to create a measuring tool that helps evaluate the level of innovation within service organizations with the intent to interpret and understand the phenomenon of service innovation in which the whole context is relevant (Bryman, 1989; Bryman & Bell, 2011; Chambliss & Schutt, 2010; Zikmund et al., 2010; Ödman, 2007). In doing so, a survey research method was applied to collect information. A survey research can additionally be divided into interviews and questionnaires to provide the researcher with results of behaviour, beliefs, values, norms, as well as attitudes, opinions and trends hence one could say that a qualitative method has been used when developing the measuring tool questionnaire and a quantitative method has been applied when testing the questionnaire in real-life settings (Bryman & Bell, 2011; Zikmund, 2010). The thesis is composed by three separate methodology parts, one concerning the development of the survey (Part 1), one concerning the practical testing of it (Part 2) and one concerning the statistical method (Part 3), all of which will be presented below.

### **3.3 Literature Review**

At the beginning of the process, a literature review was carried out in order to orient ourselves within the problem area and thus be able to work with the problem formulation in an adequate way (Patel & Davidson, 2003). Searches on innovation, innovation in services, survey and measurements of innovation was done in libraries, Google scholar, Summon and Emerald Insight, as these pages and search engines admitted possessing scientific papers and other recognized reports, books and authors. Much was found regarding innovation measurement within manufacturing, however the gap concerning the service sector became evident and thus confirming the need to proceed in the work of developing a measuring tool for this. By reading books and scholarly articles, the theories chosen has in the most careful manner possible been sorted out to the most relevant articles linked to the problem statement and thus helped creating an understanding of which indicators enable or hamper innovation within a service firm. Hence, active choices in choosing theories and boundaries around them was made, for example by limiting the study to seven main categories even though there are a plethora of alternative factors that also enable or hamper innovation (Yin, 2013).

# Part 1

## 3.4 - Developing the Pre-test

When developing a survey, Passmore et al. (2002) suggest that the following eight steps should be considered in order to produce useful and publishable results; (1) state the problem or need, (2) plan the project, (3) state the research question, (4) review the literature, (5) develop or adapt existing survey items, (6) construct the survey, (7) conduct pilot tests, and (8) administer the survey. Steps one to four (1-4) has already been elaborated on throughout the thesis, leaving the remaining four steps (5-8) to be treated continuously through the following methodological discussion. For the survey to succeed in measuring a service firm's level of innovation it is of utmost importance that it treats the relevant aspects i.e. that it asks pertinent questions (Passmore et al., 2002; van Teijlingen & Hundley, 2001). In order to specify what these questions are, a first draft survey of 125 questions (*Appendix 1*) was made into a pre- test. All questions in the pre-test survey was based upon the reviewed literature and aimed at targeting the respondent's attitudes towards change and innovation within the chosen firm, both at the individual and at the firm level.

### 3.4.1 Creating the Pre-test Survey

In order to develop appropriate measures for drivers and barriers for innovation, the literature and theoretical concepts on innovation measurement was revisited (Bryman, 1989; Bryman & Bell, 2011; Nolan & Heinzen, 2008; Zikmund et al., 2010). Creating the first sample of the pre-test questionnaire was a time consuming task that included revising the theory of survey creation as well as digging deeper into the theoretical aspects of factors enabling or hampering innovation within service firms. As mentioned earlier, seven factors, frequently occurring in literature were chosen to compose the general structure and division of the questionnaire, namely; *culture and interactions, attitude to innovation, top management commitment, innovation priority, systematic approach, contextual analysis and limitations*. Under each category, a total of about 15-20 questions ranging from personal to general views were presented, many of them rather similar in their design. As mentioned, the preliminary questionnaire consisted of 125 questions. Under each theme, there was room for additional comments so that the respondents could elaborate on how they perceived the questions (Burns et al., 2008).

Further, as indicators themselves cannot be quantified, they had to be coded in order to be measured (Bryman, 1989; Bryman & Bell, 2011), and this was done through a so-called Likert scale which measures attitudes by allowing respondents to answer the intensity of how much they agree with statements they are given (Liker, 1974). This is often applied as scales from 1-5, but also 1-7 or 1-9 etc., where 1 represents that the respondent strongly disagrees, and 5 (or 7 or 9) represents that the respondents strongly agrees (Bryman, 1989; Bryman & Bell, 2011; Passmore et al., 2002; Zikmund et al., 2010). The survey was made with a seven scale points (1-7) as well as one option of “I do not know” (0). Having an odd number of response points permits respondents to adopt a neutral position (Passmore et al., 2002). Further, having a seven-point scale is recommended as reliability is maximized with seven-point scales (Cox, 1980; Preston & Colman, 2000).

In total, the pre-test consisted of eight pages, the first included the aim of the survey and also instructions for how the respondents should answer the questions as well as three general questions regarding information about the respondent's; gender, years within the firm and current position. This information aims at enriching future analysis of the data.

### **3.4.2 One-on-One Interviews**

To determine if the respondents interpreted the questions in the manner expected by the framers, 15 one-on-one cognitive interviews were performed, varying in length from 40 minutes up to one hour. The method intended to observe how the respondents worked through the instructions, questions and to assess whether the response categories were appropriate for the items. It also intended to identify ways in which questions could be rephrased in order to make them clearer (see Ouimet et al., 2004). To obtain the needed information, the respondents filled out the questionnaire while they were asked to think aloud as they answered the questions. The interviewers paid close attention to how the respondents read the instructions, if they paused, if they thought questions were too hard to answer or if questions were perceived as repetitive in which case a request regarding best formulation in regards to the question were done etc. Questions such as; *were there items you did not understand? were there questions you did not know how to respond to? were the directions for the survey clear?* were discussed with participants during all one-on-one meetings. Their responses differed somewhat, which could be detected to their position within the firm. Managers showed a larger understanding of questions concerning the firm's strategies and financial status than those not possessing a managerial position. Not surprisingly since they have more of an insight and also a larger

responsibility to follow the budget. When confusion occurred concerning the questions, the majority of respondents elaborated extensively on why the questions were difficult to answer and either left the question blank or circled the “I do not know”- alternative.

The process provided the interviewer with a full and rich understanding of the mental processes the respondents use when answering the questions, an important step when developing a survey since research demonstrates that a survey is only as useful as its comprehension by the participant (Lutz et al., 2009; O’Donnell et al., 2007).

### **3.4.3 Sample for the Pre-test**

#### ***3.4.3.1 Firm Selection***

The first step in the development of the pre-study, before any interviews could be done, was to find a company that would be suitable for the purpose of this thesis. The sampling is of importance as the choice of sample affects the results of a study (see Miles & Huberman, 1994). The criteria for the company was that it should be; within the service business, a professional firm, located in Sweden, a size relevant from a medium (50-249 employees) or a large (250< employees) company and that they should view themselves as being innovative. These parameters have been chosen as they are relevant for the purpose of this study. The selected company Montico<sup>1</sup>, applies to all of the above mentioned factors. Further, the selection of the company was made out of the prior knowledge that the firm engage in developing activities and with that getting a company willing to participate and thus also to provide answers to the questions that are intended to be answered, hence convenience and access played a major role. This selection process is similar to a strategic choice and the advantage of a strategic choice that researchers get what is desired (Kvale, 1997; Malterud, 1998; Trost, 2005).

#### ***3.4.3.2 Respondent Selection***

In total, the one-on-one interviews were conducted with the help of 15 persons, a number which according to Saunders et al. (2009) and Fink (2003) is satisfying since it exceeds 10, which according to them is a minimum for a student questionnaire and thus a reasonable number of participants in the pre-test. In the development of the survey, the sample was a so-called purposive sampling i.e. judgemental sampling, and for the purpose of this thesis and in this stage of the survey development, two sampling techniques has been used; *typical case sampling*

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<sup>1</sup>Montico, founded in 1996 has during the last decade experienced a rapid growth, evolving from offering temporary staffing and contract manufacturing to offering services in staffing, recruitment, coaching, conversion and counselling. Currently, the group has about 650 employees and annual sales of approximately SEK 400 million.

and *expert sampling* (Saunders et al., 2009). Of the total amount of 15 respondents, ten persons represented the general workforce i.e. mainstream white collar workers within the firm. They provided the pilot survey with their individual expertise and competences that helped refine the survey so that it appeals to others like themselves. Five persons represented the top management team, with the purpose to provide comments concerning their positions within the firm. These five were chosen as so-called experts within their area of work. The sample studied was not representative of the whole population in the company, hence it was a non-probability sample that was strategically chosen to best enable answering the research question. For researchers pursuing qualitative or mixed methods research designs, this was not considered to be a weakness but rather a strategic choice (Mays & Pope, 1995).

## **Part 2**

### **3.5 - Pilot Survey Questionnaire**

#### **3.5.1 The Finalized Questionnaire**

After having conducted the 15 pre-test surveys, revisions based on the pre-test study data was made in a meticulous way, transforming the questionnaire substantially. No corrections were made in the survey during the pre-test interviews, meaning all respondents faced the same original questionnaire. However, the comments made in the one-on-one interviews helped refine the survey so that misunderstandings and confusion was eliminated which made the survey accessible and reliable for measuring the level of innovation within a service context (Burns et al., 2008; Passmore et al., 2002). Comments on the degree to which the survey was comprehensive, informative, graphically easy to fill etc. was taken into account and these were compiled as well as suggestions of how to improve the survey. Questions that left room for interpretation were cut from the survey as well as questions that were, by the respondents, seen as repetitive in an unproductive manner. The aim was to keep the questionnaire as short and as accurate as possible in order to assure a satisfactory response rate so in total 75 questions were eliminated from the survey. The will to reduce questions was based upon the notion that a smaller amount of questions will increase the rate of participation among the respondents and that it helps concretize the core of the questionnaire so that respondents understand its value and thereby complete it (OECD, 2005; Passmore et al., 2002).

To summarize, the survey shrunk from 125 questions to 50 improved questions through methodical and systematic changes. Instead of eight pages, the survey now consisted of four pages, the first stated the aim of the survey, the instructions for how to complete it and a general definition of ‘innovation’. The descriptive data had been moved from the first to the last page, so that it would not disturb the respondents while reading the instructions. The squares that were meant to put comments in were eliminated in the final version thus they seemed no longer relevant.

### **3.5.3 Distribution of Questionnaire**

After the development of the questionnaire, due to time constraints and the fact that it serves as a relevant sampling frame for the purpose, the decision was made to test the survey at the same company, Montico, where it had been developed through the pre-test survey (Denscombe, 2011). The persons used in the pre-test were however excluded from the pilot testing. For the testing of the questionnaire, due to geographical situation, the questionnaire was sent out to the respondent by post (Bryman & Bell, 2011; Chambliss & Schutt, 2010; Saunders et al., 2003; Zikmund et al., 2010). Self-administered surveys, distributed by mail or email, are generally less expensive to administer than in person or telephone surveys and provide privacy and anonymity to respondents which was seen as an advantage in this case (Burns et al., 2008). The respondent were asked to re-send the completed questionnaire to the researchers, which unfortunately could lead to lower response rates and a great amount of time before the filled out questionnaires got back to the researchers (Bryman, 1989; Bryman & Bell, 2011; Zikmund et al., 2010). According to Bryman (1989) this type of correspondence typically yield numerous unusable or incomplete responses and may require multiple mailings to obtain a response rate high enough to generalize the data gathered to the whole target population. To overcome this obstacle, a contact person on sight was asked to collect the questionnaire from the respondents and re-send them collectively, leaving the respondent with no onus on re-sending and made sure of their privacy.

### **3.5.4 Calculating the Minimum Sample Size**

Another factor influencing a survey’s usefulness is its response rate, the lower the return rate; the more likely it is that the characteristics of respondents differ from those of non-respondents. Therefore, the results may not be trustworthy. Investigators consider approximately 35 percent being reasonable when conducting academic studies involving top management or

organisations' representatives (Baruch, 1999), though this may vary according to the purpose and nature of the study (Saunders et al., 2009). Worth mentioning is Neuman (2005) who suggests response rates of between 10 and 50 percent for postal questionnaire surveys. Hence, before the distribution and sampling of the questionnaire, an estimation of the minimum sample needed was done. This calculation assumes that data will be collected from all cases in the sample and was based on our level of confidence in the estimate and the margin of error can be tolerated (Saunders et al., 2009). Based on the research methods literature it was decided that we needed a 90 per cent certain that the 'estimate' was accurate which corresponded to a score of 1.65 (Saunders et al., 2009:581) the reason for this diffident estimate was due to the fact that it was a questionnaire in a developing and testing phase. Based on our reading we also decided that 'estimate' needed to be accurate to within plus or minus 10 per cent of the true percentage, meaning the margin of error that can be tolerated.

In order to calculate the minimum sample size, we needed to estimate the proportion of respondents who would be present during the time limit for the questionnaires, since we did not have a similar survey to get a reasonable idea of the likely proportion, we had to assume worst case, that only 50 % would be present (Saunders et al., 2009). With our estimations the calculated minimum sample size was 67,5<sup>2</sup>. However, if the population is less than 10 000, a smaller sample size can be used without affecting the accuracy. This is called the adjusted minimum sample (Saunders et al., 2009). Because of the small total population, we needed a minimum sample size of only 61,14 with a 100% response rate. With this minimum sample in mind, a total of 100 questionnaires were sent out for this testing, out of these a total of 69 surveys were filled in and sent back, meaning the minimum sample size was compiled, a response rate well above Bakers (1994) sample size of 10–20% of the sample size for the actual study.

### 3.5.5 Pilot Sample

For the testing of the questionnaire a probability sample that was eligible, this to ensure that a representative sample was selected from the sample frame (Bryman, 1989; Bryman & Bell, 2011; Nolan & Heinzen, 2008; Saunders et al., 2003; Zikmund et al., 2010). This however

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<sup>2</sup> The estimates were substituted into the following formula;  $n = p\% \times q\% \times \left[ \frac{z}{e\%} \right]^2$  where  $n$  is the minimum sample size required,  $p\%$  is the proportion belonging to the specified category,  $q\%$  is the proportion not belonging to the specified category,  $z$  the value corresponding to the level of confidence required,  $e\%$  is the margin of error required.

required a full list of potential respondents is available in the sample frame. Such a list was not feasible to acquire hence not used at this stage. However, in agreement with the CEO of Montico, who could obtain a full list of names of employees, a scheme of individuals at the firm was established. In total, 100 questionnaires were distributed, since the total population at Montico was 650, we chose to take every 6th employee based on the order they are presented in personnel archive. This probability sample method is known as systematic sampling (Saunders et al., 2009). Descriptive details from the pilot sample are presented in section 4.1.

## **Part 3**

### **3.6 Data Analysis**

#### **3.6.1 Data Entry – Factor Analysis**

For the purpose of this particular study and to further refine our survey, an exploratory factor analysis was performed in SPSS to test hypotheses and theories concerning the underlying structure of the variables chosen in the questionnaire (Stewart et al., 2001). Factor analysis is a so-called ‘data reduction’ technique which takes large data sets of variables and summarises it to smaller sets of factors or components. This was done by searching for inter-correlations within a set, forming ‘clumps’ or groups of variables which in turn helps reduce and refine the questionnaire into smaller, coherent subscales. The attempt was to produce a number of linear combinations of the original variables so that they would capture most of the variability in the pattern of correlations and thus test the validity and reliability of the questionnaire (Pallant, 2013).

#### **3.6.2 Data Coding**

When the questionnaires had been collected, the task of data entry started. Firstly, variables that corresponded to each of the variables and questionnaire items were created in SPSS. The items concerning culture and interactions were coded VARQ1-7, attitude to innovation was coded VARQ8-19, top management commitment was coded VARQ20-25, innovation priority was coded VARQ26-31, systematic approach was coded VARQ32-40, contextual analysis was coded VARQ41-45 and limitations were coded VARQ46-50 (See Appendix 2 for specific questions). The decision was made to turn the ‘I do not know’-alternative i.e. (0) on the Likert scale into a missing value coded as -999. This was done so that the non-responses would not inflict as legitimate values in the statistical analysis (Pallant, 2013). Also, question number 9



was reversed before entering the data into the programme; this was done because the particular question was not asked in a consistent manner towards the other questions. If this would not have been done this question would give a false indication (Pallant, 2013).

### **3.7 Assessing the Validity**

In general terms, validity refers to whether a measure actually measures the concept it refers to (Bryman, 1989; Bryman & Bell, 2011; Zikmund et al., 2010). The three most common types of validity are; content validity, criterion validity and construct validity (Pallant, 2013). Content validity refers to the adequacy with which a measure or scale has sampled from the intended universe or domain of content. Criterion validity concerns the relationship between scale scores and some specified, measurable criterion. Construct validity involves testing a scale not against a single criterion but in terms of theoretically derived hypotheses concerning the nature of the underlying variable or construct. The construct validity is explored by investigating its relationship with other constructs; both related (convergent validity) and unrelated (discriminant validity) (Pallant, 2013).

The quality of the data obtained through the survey depends on how well respondents understand the items and questions. Such understanding is affected by their reading level, cultural perspective, and language skills. As researchers we must address these limitations when designing the survey (Passmore et al., 2002). Since a new measurement tool was developed, content validity was achieved by performing a small scale pre-test with one-on-one interviews where the respondents commented on the questions in the questionnaire, regarding terms and formulations, wordings etc. The aim was to avoid ambiguous questions and misunderstandings. After having held all 15 one-to-one interviews the questionnaire was subjected to revision (Bryman, 1989; Bryman & Bell, 2011; Saunders et al., 2009).

For validating to which extent the measurement of questions actually measure the presence of the intended constructs, the concept of the questions must be well grounded in the theoretical framework. The theory has therefore carefully been reviewed and selected based upon the purpose of the study meaning, the concepts and seven themes used to develop a survey is well grounded upon theory (Frankfort-Nachmias & Nachmias, 2007; Saunders et al., 2009; Zikmund et al., 2010).

Convergent validity refers to the extent to which a measure converges with other measures of the same construct, simply put that the variables within a single factor are highly correlated by the factor loadings (Campbell & Fiske, 1959; Bryman, 1989; Bryman & Bell, 2011). Looking at the result, the loadings of all constructs had a KMO-value of 0.7. More specifically, all of the loadings displayed a good validity since 0.6 suggested as the minimum value for a good factor analysis (Comrey & Lee, 1992; Tabachnick & Fidell, 2001).

Discriminant validity refers to the extent to which factors are distinct and uncorrelated. Here, variables should relate more strongly to their own factor than to another factor, 0.32 serve as a good rule of thumb for the minimum loading of an item. This since 0.32 equals to approximately 10% overlapping variance with the other items in that factor (Tabachnick & Fidell, 2001). If the cross-loadings are greater than 10%, of the overlapping variance becomes important to assess if the variable disturbs the overall analysis. Generally, a variance between 10% - 20% is acceptable as well as cross-loads of up to 0.45, hence these guidelines were used in this report and an examination of the pattern matrix was done to verify that the constructs did not cross load (Tabachnick & Fidell, 2001). Further, it is important to look at the communality of a variable as it displays the sum of the loadings of the particular variable on all extracted factors, meaning it demonstrates the extent of which a variable correlates with all other variables (Rietveld & Van Hout, 1993). A high communality of a variable indicates that the extracted factors account for a big proportion of the variable's variance indicates that the specific variable is reflected well via the extracted factors (Rietveld & Van Hout, 1993). MacCallum, Widaman, Zhang, and Hong (1999) suggest that communalities should be greater than 0.6, a value used in this study, and item communalities of 0.8 or greater are considered "high" (Costello & Osborne, 2005).

Predictive validity is concerned with the ability of the measures to make accurate predictions, meaning, if the measurement questions used within the questionnaire aim to predict a firm's level of innovation, criterion related validity will be the extent to which they actually predict it (Bryman, 1989; Bryman & Bell, 2011). A concurrent validity test could be done by using a second similar test as it acts as a type of benchmarking and if the correlation is high, the new measure has criterion validity in this aspect (Bryman, 1989). Since the objective of this thesis is to develop a measuring instrument, there are important aspects in quantitative research to consider in order to determine whether the measurement instrument is reliable (Bryman & Bell, 2011). To do so the questionnaire should be tested again to see if the respondents answered in

a fairly similar way. However, due to time constraints, the assessment of the stability of the measure could not be applied and thus the best alternative is to test the internal reliability. This was evaluated by calculating the Cronbach's Alpha coefficient, which is a statistic measurement of internal consistency or reliability of an instrument. In other words, it measures how well a set of variables or items measures a single, one-dimensional latent aspect of individual factors. Cronbach's Alpha is further presented below.

### **3.8. Reliability**

For the pilot study, we calculated Cronbach's Alpha, a measure of internal consistency reliability. This statistic is an overall item correlation where the values range between 0 and 1, with 0,7 being the rule of thumb for acceptance, that is, 70% of the variance in the equally weighted composite is due to the common factor among the tests (Cronbach, 1951). In other words, it shows how closely related a set of items are as a group. For scales that are used as research tools to compare groups, a value of 0,7–0,8 are regarded as satisfactory (Nunnally, 1978; Bland & Altman, 1997; DeVillis, 1991). According to Zikmund et al. (2010) and Nunally (1978) a coefficient Alpha value between 0,6-0,7 is regarded as fair reliability, a value between 0,7-0,8 is regarded as good reliability and a value between 0,8-0,95 is regarded as very good reliability.

### **3.9 Limitations**

The ambition during the creation and testing of the questionnaire has without doubt been to avoid all possible miss happenings and errors so that the end result would be as ideal as possible. We acknowledge that there are certain elements that are associated with biases, subjectivity and where room is left for interpretation. However, this is hard to evade when working with these methods that ultimately are concerned with the perceived notions of the respondents (Yin, 2013).

When developing a survey, the size of sampling is of significance (Hackshaw, 2008). In this study, the sample size is relatively small with 69 respondents. Collecting data from a larger number of respondents could be a factor making the results more statistically reliable since large studies can produce more precise results. However, it is often better to test a new research hypothesis in a small number of subjects first to avoid spending too many resources (Hackshaw, 2008). Although a large sample often is more desirable, a smaller sample also gives statistically

significant results. Hogg and Tanis (2010) gives a general proposal of a minimum sample size of 30 individuals to make statistical inferences about a population. With this in mind the actual sample size should have very limited actual effects on the study results.

Another concern is the use of only one company for this study, which results in the fact that the findings cannot be generalized to the broader community. Ideal would be to conduct a larger amount of testing, which we propose for further research. During empirical research projects where outside sources play a vital role in retaining information, there is a possible risk of biases (Trost, 2005). For example during the pre-test, where the so called interviewer effect might occur. In order to minimize this effect a natural approach was applied by the interviewers concerning body language, tone of voice, expressions, leading questions etc. (Yin, 2013). For the testing of the pilot, the self-completion questionnaire diminishes the risk of social desirability bias and interviewer variability as no researcher needs to be present (Bryman, 1989; Bryman & Bell, 2011). However, as the respondents answer the questions on their own this method has an inherent disadvantage as there is no possibility to ask the researcher for clarifications, consequently the questions was designed to be comprehensible and easy to understand for the respondents (Bryman & Bell, 2011).

### **3.10 Summary of Method**

This study can be perceived to be both qualitative and quantitative in its design. A non-probability sampling method and probability method has been used which generally is employed in order to ensure a representative sample selection (Bryman, 1989; Bryman & Bell, 2011; Nolan & Heinzen, 2008; Saunders et al., 2003; Zikmund et al., 2010). Further, the validity has been assessed through various methods to ensure accurate measurement and the reliability has been calculated by using Cronbach's Alpha to confirm the trustworthiness of the survey. However, since this study had a relatively short timeframe, the research has been carried out at one company meaning, a longer timeframe would have made it possible to collect data from a larger number of respondents to make the results more statistically reliable. This entails that the result is not generalizable.

# 4. Empirical Findings

## 4.1 Descriptive Statistics

Regarding the descriptive data, the included items were gender, position at the firm, age and time spent at the firm. The presentation of this data was due to the fact that descriptive statistics allows the researcher to summarize and arrange numerical data so that it becomes more comprehensible and easier to analyze (Saunders et al., 2003; Zikmund et al., 2010). During the data collection a total of 100 questionnaires were sent out to the chosen firm, 69 questionnaires were completed resulting in a response rate of 69%.

**Table 2: Descriptive statistics**

	Frequency	Percent		Frequency	Percent
Gender			Age		
Male	36	52	<30	12	17
Female	33	48	31-40	16	23
			41-50	27	39
			51-60	13	19
			60<	1	2
<b>Position</b>			<b>Years at firm</b>		
Top level managers	18	26	<1	14	20
Economy	5	7	1-3	32	46
Staffing/Recruiting	7	10	4-7	17	25
Skills development	11	16	8-10	5	7
Other	21	31	10<	1	2

There is a rather equal distribution among males (52%) and females (48%). The participants are widely distributed among the different positions, however CEO and other tops the list with a total of 57%. The majority of the respondents are between 41 to 50 years old, only one participant is older than 60. A vast majority of the participants have worked within the firm for less than 7 years, only 2% of the participants have worked at the firm for more than a decade.

## 4.2 Empirical Results

When conducting a factor analysis there are some crucial values to consider in order to evaluate if the results are good or bad. First, the Kaiser-Meyer-Olkin (KMO) value measure should be larger than 0,6 in order to be valid. The Eigenvalue should be equal to or larger than one and the Cronbach Alpha should be larger than 0,7 (Pallant, 2013). For this particular factor analysis the value of extraction of components has been set to a cut off value of 0,32, meaning that

values under this level that overlap with others will not be put into consideration (Comrey & Lee, 1992).

In this section, an objective and simplified account of the factor analysis will be presented based upon the seven themes. As mentioned, these themes have been carefully selected based upon current theory regarding possible drivers and barriers of innovation. Working around these themes has been continuing process throughout the whole thesis creation which can be studied more closely in Appendix 1-3. In the following sections each theme will be presented in an unambiguous way based on the factor analysis, for all details see Appendix 4.

#### 4.2.1 Theme 1 – Culture and Interaction

The factor analysis on questions VARQ1 – VARQ7 resulted in two distinct constructs, with an initial KMO-value of 0,783 and Bartlett’s test of sphericity showed 0,000. The Eigenvalue showed that there were no competition from other components since the Eigenvalue to the nearest was 0,721 (Comrey & Lee, 1992). Together the two constructs equalled 72,14% of the total variance where component 1 represented 55,69% of the total variance and component 2 accounted for 16,45%. The values showed good validity and with a Cronbach Alpha of 0,866 the reliability is trustworthy. Worth noting is that the factor analysis show a cross load on VARQ5 and VARQ7 indicating that the variables load on two constructs, which is not desirable in regards to the discriminant validity since the desired outcome is that a variable loads only on one construct (Comrey & Lee, 1992). The factor loadings in the RTM show that the loadings

**Table 3: Loadings on Theme 1**

Theme 1		Factor loadings		Communality
<b>Construct 1</b>				
VARQ1	På vårt företag finns en innovationsvänlig kultur	,770		,684
VARQ2	Innovation är en viktig del av företagets värderingar	,781		,610
VARQ5	Det finns goda möjligheter till samarbete mellan anställda på företaget	,780		,753
VARQ6	Medarbetare får uttrycka sina idéer fritt	,798		,738
Eigenvalue			3,899	
% Variance			55,695	
<b>Construct 2</b>				
VARQ3	Innovation är närvarande i hela företaget	,831		,740
VARQ4	Alla är delaktiga i innovation på företaget	,903		,833
VARQ7	Medarbetare får vara med och påverka	,748		,693
Eigenvalue			1,152	
% Variance			16,450	

are fairly weak in relation to one another (0,780 vs. 0,379 and 0,364 vs. 0,748) and also that they are close to the cut of value of 0,32 (0,379 and 0,364), which implies that both constructs are valid and reliable hence should be kept as they are.

#### **4.2.2 Theme 2 – Attitude to Innovation**

The first factor analysis on VARQ8-VARQ19 resulted in four distinct constructs with a KMO-value of 0,832 and Bartlett's test of sphericity displayed 0,000. The Eigenvalue showed no competition from other components since the nearest value was 0,650 (Comrey & Lee, 1992). Together the four constructs stood for 79,07% of the total variance. However, the Total Variance Explained matrix showed four constructs on which the Rotated Component Matrix showed multiple cross-loads on VARQ8, VARQ14 and VARQ17 which may lead to problems with the discriminant validity (See Appendix 4). Due to the cross-loadings, further factor analysis were necessary and done by excluding VARQ8 since both the Components Matrix and Rotated Component Matrix showed a low loading of the variable in relation to the other variables it did not load on any other component. The Total Component Matrix for second factor analysis displayed a negative load on VARQ9R and cross load on VARQ17 on three out of three constructs and on VARQ15 on two, still no distinct constructs without cross-loadings was showed meaning that there still can be problematic in terms of validity of the measure. Based on the results of communalities, Component Matrix and Rotated Component Matrix, it is evident that VARQ9R displays some problems as it does not load on any component and has a communality value of ,366 hence the variable does not contribute to the explanation of any occurring construct. VARQ17 shows a multiple cross-load on three components hence the variable is problematic as well.

A third factor analysis was conducted by excluding VARQ9R and VARQ17 but adding VARQ8 again. The Rotated Component Matrix showed a cross-load on VARQ8 on three out of four constructs and VARQ14 cross-loads on two constructs. Since the desired outcome is distinct constructs with no cross-loads that could impinge on the validity, further factor analysis was still needed without these variables. The fourth factor analysis were conducted by excluding the previous mentioned and adding VARQ9R again, in other words, the factor analysis was done on VARQ9R – VARQ16, VARQ18, VARQ19. This analysis displays that VARQ9R has a low communality (0,419) and shows a negative load in the Rotated Component Matrix and thus further analysis was done excluding this variable. A fifth factor analysis was done on variables VARQ10 – VARQ16, VARQ18 and VARQ19. In this analysis, VARQ14

shows a strong cross load on two out of three constructs indicating possible problems with the validity. Another analysis was performed on VARQ10 – VARQ13, VARQ15, VARQ16, VARQ18 and VARQ19 leaving VARQ14 out. This factor analysis displays problems with VARQ19 by resulting in a low communality (0,258) a weak load in the Rotated Component Matrix (0,406). Further, VARQ15 has a cross-load on two out of two constructs.

A final factor analysis was conducted by excluding VARQ19, the variables remaining is VARQ10 – VARQ13, VARQ15, VARQ16 and VARQ18. The factor analysis resulted in two constructs; VARQ10-13 + VARQ18 formed one construct and VARQ15-16 formed a second construct. The Eigenvalue of the first component was 4,485 which is equal to 64,06% of the variance, the second component had an Eigenvalue of 1,242 equal to a variance of 17,74%. Together these constructs stood for 81,80% of the total variance. The nearest Eigenvalue was 0,508 which meant that there was no competing construct. The KMO-value was 0,850, Bartlett’s test of sphericity 0,000 and the Cronbach Alpha was 0,831, both of which were satisfying for the purpose. The five questions that did not correspond well in the survey were eliminated from the survey, i.e. VARQ8, VARQ9R, VARQ14, VARQ17 and VARQ19. Consequently, our preferred solution resulted in two constructs with good validity and reliability were kept with no cross loads.

**Table 4: Loadings on Theme 2**

Theme 2		Factor loadings		Communality
<b>Construct 3</b>				
VARQ10	Det är bra med nya idéer	,904		,820
VARQ11	Innovation är spännande	,944		,912
VARQ12	Innovation är viktigt	,923		,888
VARQ13	Förändring är spännande	,913		,880
VARQ18	Förändringar får gärna ske i mitt arbete	,816		,729
<i>Eigenvalue</i>			4,485	
<i>% Variance</i>			64,066	
<b>Construct 4</b>				
VARQ15	Om nya idéer kommer underifrån är jag inte benägen att anpassa mig	,805		,711
VARQ16	Jag känner mig ofta hotad av nya idéer	,884		,786
<i>Eigenvalue</i>			1,242	
<i>% Variance</i>			17,74	



### 4.2.3 Theme 3 – Top Management Commitment

The factor analysis on questions VARQ20 – VARQ25 resulted in one construct with a KMO-value of 0,831 and Bartlett’s test of sphericity showed 0,000. The Eigenvalue of 4,151 assures that there was no competition from other components since the value of the nearest was 0,683 (Comrey & Lee, 1992). The construct stood for 69,18% of the total variance and with a Cronbach Alpha of 0,906. Based on the mentioned values the construct is perceived as trustworthy both in respect of its validity and its reliability.

VARQ20 could be questioned due to its rather low communality of 0,523, however it exceeds 0,5 which is the value that has to be met in order to be included in the analysis therefore the question remains in the questionnaire. The results displayed a strong validity and reliability and a strong construct. The decision was made to keep all six questions without making any further changes.

**Table 5: Loadings on Theme 3**

Theme 3		Communality	
<b>Construct 5</b>			
VARQ20	Vår högsta ledning uppmuntrar de anställda att utveckla nya idéer, processer och strategier	,523	
VARQ21	Det finns ett utbyte av idéer mellan högsta ledningen och övriga anställda inom företaget	,833	
VARQ22	Ledningen arbetar systematiskt med innovation	,572	
VARQ23	Vår högsta ledning ger utrymme att öppet diskutera nya idéer med de anställda	,673	
VARQ24	Ledningen är intresserad av medarbetares idéer	,868	
VARQ25	Ledningen är mottaglig för idéer som kommer från medarbetare	,682	
<i>Eigenvalue</i>			4,151
<i>% Variance</i>			69,180

### 4.2.4 Theme 4 – Innovation Priority

The factor analysis on VARQ26 – VARQ31 resulted in one distinct construct with a KMO-value of 0,763 and Bartlett’s test of sphericity displayed 0,000. The Eigenvalue was 3,636 which resulted in 60,60% of the total variance whilst the nearest construct had a value of 0,861. VARQ30 showed a low level of extraction (0,248) and since it did not exceed the minimum value of 0,5 it was eliminated and a second factor analysis was made without this variable (see Appendix 4) The KMO-value after having eliminated VARQ30 was 0,754 (previously 0,763) while the Cronbach Alpha increased from 0,862 to a more favourable value of 0,887. The rise in Cronbach Alpha validate the elimination of question 30, leaving five questions under the theme.

**Table 6: Loadings on Theme 4**

Theme 4		Communality	
<b>Construct 6</b>			
VARQ26	Vårt företag prioriterar innovation	,548	
VARQ27	Företaget är bra på att finansiera nya idéer	,780	
VARQ28	Företaget ger projektstöd i form av startkapital	,792	
VARQ29	Idéer tar sig snabbt från tanke till verklighet	,616	
VARQ31	Idéer får chansen att bli testade	,714	
<i>Eigenvalue</i>			3,450
<i>% Variance</i>			69,001

#### 4.2.5 Theme 5 – Systematic Approach

The factor analysis on VARQ32 – VARQ40 resulted in one construct with a KMO-value of 0,872 and Bartlett's test of sphericity showed 0,000. The Eigenvalue of 5,768 equals 64,08% of the total variance. VARQ34 shows a low communality (0,373) which indicates that the variable does not contribute to the explanation of the theme. Hence the decision was made to remove the question hence a second factor analysis was performed. The new KMO-value was 0,879 and the second factor analysis still resulted in one distinct construct with the Eigenvalue of 5,439 which equals 67,98% of the total variance. There was no competition from other components since the nearest Eigenvalue was 0,712 (Comrey & Lee, 1992). When VARQ34 was extracted the solution could not be rotated and the calculated Cronbach Alpha resulted in

**Table 7: Loadings on Theme 5**

Theme 5		Communality	
<b>Construct 7</b>			
VARQ32	Jag är medveten om hur arbetet med innovation går till på företaget	,711	
VARQ33	Innovation är tydligt uttryckt i företagets strategi	,559	
VARQ35	Jag anser att det finns ett fungerande tillvägagångssätt för arbetet med innovation på företaget	,804	
VARQ36	Det finns metoder inom företaget för att fånga upp och utvärdera idéer	,761	
VARQ37	Det finns dokumenterade innovationsprojekt att dra lärdom av	,511	
VARQ38	Jag anser att vi är bra på att införa idéer på företaget	,709	
VARQ39	Ledningen kommunicerar om de förändringar som sker på företaget	,637	
VARQ40	Jag anser att företaget skapar möjligheter för samarbete mellan avdelningar vid innovationsprojekt	,748	
<i>Eigenvalue</i>			5,439
<i>% Variance</i>			67,989

a value of 0,930 making the construct perceived as trustworthy both in respect of its validity and its reliability.

#### 4.2.6 Theme 6 – Contextual Analysis

The factor analysis on questions VARQ41– VARQ45 resulted in two distinct constructs with a KMO-value of 0,722 and Bartlett’s test of sphericity displayed 0,000. The Eigenvalue of showed no competition from other components since the value to the nearest was 0,437 (Comrey & Lee, 1992). Together the two constructs stood for 83,20% of the total variance where component 1 represented 62,96% and component 2 represented 20,23%. VARQ43 showed a cross load which could indicate problems in the discriminatory validity, however the decision was made to keep the question under component one. Further, one of the constructs (VARQ41) is a single construct, meaning that the variable is not loading with any of the other variables. If VARQ41 were to be kept in the factor analysis it would solely count for more than 20% of the total variance. This is not desirable since a construct should be a multivariable correlation (Boyd et al., 2004; Hair et al. 2009). Hence another factor analysis was made with the exclusion of VARQ41.

The second step gave a new KMO-value of 0,718 and the Eigenvalue was 3,011 and represented 75,26% of the total variance. The nearest component had a value of 0,523. The Cronbach Alpha value was 0,888 hence the construct shows good validity and its reliability. VARQ41 was eliminated from the questionnaire.

**Table 8: Loadings on Theme 6**

Theme 6		Communality	
<b>Construct 8</b>			
<i>VARQ42</i>	Jag anser att det ingår i mina arbetsuppgifter att veta vad som sker i min bransch	,602	
<i>VARQ43</i>	Jag har koll på trender i omvärlden som rör mitt arbete	,731	
<i>VARQ44</i>	Genom att ha koll på trender i omvärlden arbetar jag proaktivt för att lösa kunders behov	,925	
<i>VARQ45</i>	Jag samarbetar med mina kunder för att utveckla nya idéer	,753	
<i>Eigenvalue</i>			3,011
<i>% Variance</i>			75,269

#### 4.2.7 Theme 7 – Limitations

The factor analysis on question VARQ46 – VARQ50 resulted in one distinct construct with a KMO-value of 0,858 Bartlett’s test of sphericity displayed 0,000. The Eigenvalue was 3,65

which equaled 72,99% of the total variance. There was no competition from other components since the value to the nearest was only 0,535 (Comrey & Lee, 1992). The calculated Cronbach

**Table 9: Loadings on Theme 7**

Theme 7		Communality	
<b>Construct 9</b>			
<i>VARQ46</i>	Det finns tillräckliga resurser för innovation	,706	
<i>VARQ47</i>	Det ges utrymme för innovation i företaget	,825	
<i>VARQ48</i>	Storleken på företaget har en positiv effekt på innovation	,732	
<i>VARQ49</i>	Storleken på företaget gör att lätt att anpassa sig till förändring	,801	
<i>VARQ50</i>	Nya idéer implementeras lätt i företaget	,585	
<i>Eigenvalue</i>			3,650
<i>% Variance</i>			72,990

Alpha was 0,907. These results, according to Pallant (2013), validates the use of all five questions within the theme as the values show a good validity and reliability hence this construct is trustworthy.

#### 4.2.8 Summary Factor Analysis

To sum up the empirical result. As for convergent validity, all constructs had a KMO-value of 0,7 or higher which stands for a good validity (Comrey & Lee, 1992). Further, an examination of the pattern matrix verify that six out of seven of the constructs do not cross-load, thus the pattern matrix indicates a cross-load only on one construct, but as the loadings differ by more than 0.2, the construct pass and thus the discriminant validity is approved (Comrey & Lee, 1992). To test the reliability, the Cronbach's Alpha coefficient was calculated for each construct. The Cronbach Alpha ranged from the lowest score of 0,818 to the highest of 0,930 which were all above the accepted level of 0.6 since all seven concepts were between 0,8-0,95 and therefore shows a very good reliability (Zikmund et al., 2010).

## 5. Discussion

As stated earlier in this thesis, most service industries differ in terms of skills desired, technology aspects, organizational structures etc.. However, regardless of these disparities, they are still facing the same major issue, namely the difficulty to measure innovation in their intangible context (Gamal, 2011; OECD, 2005; OECD, 2010). In contrary to manufacturing firms, service firms can rarely measure its success in traditional metrics and hard values such as patents, product launches, R&D etc. (Droege et al., 2009; Hipp & Grupp, 2005; Maglio et

al., 2006; Menor et al., 2002:135; Menor & Roth, 2007:825; OECD, 2005; Rust & Chung, 2006). The objective of this thesis has therefore been to develop a suitable survey that can serve to decrease the knowledge gap and hence help reduce the current dilemma (OECD, 2010; Cook, 2008; Fink, 2003; Passmore et al., 2002).

## **5.1 Finalizing the Questionnaire**

In the development of the survey, three main aspects has been considered – the theoretical aspects of miscellaneous researchers, the empirical view of the respondents and the statistical results from the factor analysis.

Previous research has demonstrated that there are several factors influencing the level of innovation within a service firm, for example corporate culture, management commitment, resistance towards change, size and external competition (see Dodgson & Gann, 2010; Gamal, 2011; Hipp & Grupp, 2005; OECD, 2005; OECD, 2010; Rogers, 2003; Scheler, 2012; Simon, 2009). Realizing the vast extent of these factors resulted in the conscious decision to build the survey around seven theoretically based themes.

When the survey was first presented to the pre-test group it became evident that some changes had to be made in order to reduce hesitation. Some questions appeared to be difficult to understand, some left too much room for interpretation and others just did not seem relevant in the current context. The ambition to eliminate the questions that did not enrich the survey was based on theory stating that a survey should be as short as possible, including only clearly formulated and relevant questions in order to achieve a satisfactory response rate (OECD; 2007; Passmore et al., 2002). Questions concerning the financing of innovation projects tended to be difficult for most to answer, only some managers seemed capable to elaborate on these which, if kept, would create a large number of missing values which would be unproductive for the upcoming factor analysis and for the purpose of the survey. Also, questions regarding limitations, such as size, appeared difficult to answer. Hardly surprising due to the fact that even researchers have diverse opinions in the matter. Some, such as Scheler (2012) and Zwick (2002) argue that size has a predominantly positive effect on innovation while others, such as Damanpour (1992) and Hage (1980) claims the contrary.

The questions that were associated with the least amount of confusion was those directly linked to the respondents, such as how well one is updated on trends and client-needs and their personal beliefs of the importance of innovation. These types of questions are according to Passmore et

al. (2002) important to include in a survey since they target the personal inner views of the respondents, so they were kept in the survey. Based on careful considerations in both theory and practice the survey was reduced from 125 questions to 50 questions.

In order to validate the questionnaire and to make sure that it could be used as a reliable tool for measuring innovation within a service context, it had to be statistically controlled through factor analysis (Bryman, 1989; Bryman & Bell, 2011; Pallant, 2013). The ambition was to detect questions that lacked coherence which could inflict with the preciseness of the measuring tool. Having passed all variables through the program (SPSS) it became evident that the majority of questions loaded very nicely amongst each other and that they generally resulted in a single construct under each theme which is desirable in a factor analysis (Boyd et al., 2004; Hair et al., 2009; Pallant, 2013). This is, according to Pallant (2013) not always the case when creating a questionnaire from scratch, therefore the current survey was perceived as a success. However, there were some questions that did not react as desired and consequently additional tests were made.

For example, in theme 2 – *attitude to innovation*. An extensive amount of analysis had to be done in order to come up with two distinct constructs. One reason for the many tests could be the fact that it consisted of many questions and thus provided several unforeseen dimensions with unexpected loadings. For example, the question regarding perceived resistance to change amongst other employees (VARQ19) resulted in a single question construct. This question could according to literature be of value for detecting drivers or barriers of innovation (OECD, 2005; Scheler, 2012; Stanley et al., 2005; Zwick, 2002). However, for this to be measured accurately and be made into an additional construct, more questions in the same genre needs to be added. According to Boyd et al. (2004) and Hair et al. (2009), a single question construct should be avoided or replaced by a construct of multifaceted questions which could capture the essence of the particular question. This however was not done in the final questionnaire of this thesis.

This was also the case when looking at theme 5 – *systematic approach*. VARQ34 showed a low level of communality, only 0,373, meaning that it did not load well enough with the other factors (Pallant, 2013). The question asked if the respondent “have been educated internally by the firm in regards to innovation”, and due to the weak result of the factor analysis one can question if the question is in fact questionable, meaning, is the query to diffuse or is it a matter of missing complimentary questions to get the full grasp about the opinion in this case? Theoretically, the question fills a valid purpose and could, if reformulated or complemented by

a similar question, serve to measure a firm's level of dedication towards innovation. Nonetheless, the decision was made to eliminate VARQ34 based on the fact that it is not consistent enough with the other factors in this particular survey.

Under theme 6 – *contextual analysis*, question VARQ41 was seeking to answer employees update on competition. In relation to other questions under the same theme one can see that there are no other questions directly relating to VARQ41. In this case there were two ways of solving the puzzle, either by adding additional queries or removing the question. In this case, the removal of the question seemed more appropriate since the testing of the remaining questions showed good validity and reliability. Adding questions that have not been tested in practice or empirically with a SPSS analysis, might compromise the other construct as well (Pallant, 2013). However, the removal of the question is not terminal in terms of future studies. In fact, the questionnaire may advantageously use another construct regarding the competition and looking at research, this notion could be a good indicator for questions regarding the success of innovation (Kuznetsova & Roud, 2014; Scheler, 2012; OECD, 2005). Last but not least, in theme 7 – *Limitations*, one question (VARQ50) could be discussed as potentially having somewhat of a low communality. However, since the construct displays a valid KMO-value and reliable Cronbach Alpha, the decision was made to include the question in the questionnaire.

To sum up, the finalized questionnaire (Appendix 3) ended up consisting of seven theoretically based themes with 42 questions. The questionnaire showed distinct constructs under each of the seven themes via the factor analysis, meaning that it covered the questions in the literature regarding innovation (Pallant, 2013), and in total nine constructs can be measured. Even the questions that were cut from the survey had strong basis in theory (Kuznetsova & Roud, 2014; OECD, 2005; Scheler, 2012; Zwick, 2002) however; they were not sufficiently supported in this specific survey. The questions in the final survey are statistically supported in terms of validity and reliability hence the questionnaire measures what its sets out to measure (Pallant, 2013). In conclusion, it is firm to say that the will to reduce the amount of questions was based upon theory, practice and statistics, and Lutz et al. (2009) and O'Donnell et al. (2007) states, a survey is only as useful as its comprehension by the participants.

## **5.2 Area of Practice**

In contrast to manufacturing firms, where the innovation focus mainly lies within products and processes, the focus of innovation in service firms is primarily dependent on the people,

embedded in attitudes and perceptions (Hipp & Grupp, 2005; OECD, 2005; Scheler, 2012; Stanley et al., 2005; Zwick, 2002). This implies that the specifically developed survey of this thesis might differ in usability depending on the characteristics and the jargon of each particular firm (OECD, 2005; Simon, 2009). In short, if innovation in service firms is reliant on attitudes, one could argue that the corporate culture related to innovation matters. Meaning, the result of this survey could differ in similar companies due to their perception of innovation. Hence, this questionnaire should not be used to compare companies amongst each other but should aim to provide a snapshot image of innovation at the service company at hand.

This aforementioned demonstrate the limitation of the usability of this survey in service firms but it also implies a limitation if one should use it in a manufacturing context as the survey measures the soft values affecting innovation which may not interfere with the product innovation process per se (Coombs & Miles, 2000; Hipp & Grupp, 2005). Subsequently, innovation in a manufacturing company is often more embedded in the products and the processes and thus not dependent upon an individual's perception or idea of the company in relation to innovation (soft values). Since innovation in manufacturing firms to some extent is decoupled from the people and more dependent on hard values, the outcome of this survey in that setting would thus be deceptive (Macaulay, 2012; Roger, 2003; Sampson & Frohele, 2006; Maglio et al., 2006).

However, an interesting notion to investigate further is how the developed survey, measuring soft values, could be used in combination, or be complementary, to measuring hard values - what is the combinatory effect of the ability to measure these values by using one single instrument? Regardless, it is once again important to acknowledge and highlight Robbin's (2014) notion, that 'one size fits all' does not apply in all contexts. To bridge this, the seven themes in the survey could be used independently and thus adapted to suit the individual requirements of a firm. With this said, a combination of soft and hard values could connote that firms and managers could have a wide measurement metrics for development of both products, processes and people.

### **5.3 Managerial Implications**

As stated, innovation and service are two fundamentally complex concepts (Adams et al., 2006; Gamal, 2011; Hipp & Grupp, 2005; OECD, 2005; Maglio et al., 2006). Prior research struggle to find a general solution to problems and issues regarding service innovation management (e.g., Afuah, 2003; Drucker, 1985; Gallouj, 1998; Herstatt et al., 2001; Hollenstein, 2001; Kelly



& Storey, 2000; Metcalfe & Miles, 2000; Preissl, 2000). Yet, service innovation stands as a key for sustained competitiveness and firm survival in manufacturing as well as service contexts and top managers are key players in enabling and stimulating innovation (Adams et al., 2006; Antoncic & Hisrich, 2003; Covin & Slevin, 1991; Galbraith, 1982; Gallouj & Windrum, 2009; Gapp & Fisher, 2007; Hui-Kuang Yu & Willoughby, 2011; Ling et al., 2008; Scheler, 2012; Simon, 2009; Zahra et al., 2000; Zwick, 2002).

In this report it has been shown that soft values are essential within service firms in terms of ability and possibility to be innovative as well as enabling or hampering innovation (Dearing, 2000; Fortuin & Omta, 2009; Foxon & Pearson, 2008; OECD, 2005; Ozorhon et al., 2014; Ren, 2009; Scheler, 2012; Sørensen & Torfing, 2011). Even if hard to measure, these factors are occurring nevertheless and the ability to measure these indicators serve as an important tool for top managers to remain competitive in a dynamic and fast changing environment and thus can give implications for top level managers wanting to foster innovative organizations (Bakhshi et al., 2008; Gamal, 2011; Hsu, 2009; Sampson & Frohele, 2006).

Since top level managers hold such an important role in monitoring the organization by identifying areas of strength to capitalize on as well as recognizing opportunities their interest and will to invest in innovations serves as key in the ability to remain competitive (Adams et al., 2006; Antoncic & Hisrich, 2003; Covin & Slevin, 1991; Gallouj & Windrum, 2009; Gapp & Fisher, 2007; Hui-Kuang Yu & Willoughby, 2011; Ling et al., 2008; Scheler, 2012). The seven themes mentioned in this study, if managed successfully, will provide a good foundation for the enabling of innovation. From a managerial point of view, this questionnaire which incorporates intangible factors creates a great benefit for innovation policy and strategy actions (Antoncic & Hisrich, 2003; Covin & Slevin, 1991; Gallouj & Windrum, 2009; Gapp & Fisher, 2007; Hui-Kuang Yu & Willoughby, 2011; Ling et al., 2008; Scheler, 2012). Thus it can, if used correctly, assist managers in service companies to understand their current innovation practices or capabilities where the attitude and adaptability of the employees can be crucial for innovation realization (Stanley et al., 2005; Zwick, 2002; Simon, 2009; Scheler, 2012; Galbraith, 1982; OECD, 2005). The questionnaire makes it possible for managers to adequately display on measuring these affecting factors, a sought after achievement for service firms to clarify what the organization need to focus on to maximize, maintain or achieve success in the matter (Adams et al., 2006). The survey developed in this study hence has a managerial contribution as well as a theoretical.

## **6. Conclusion**

The aim of this report was to develop an innovation metrics instrument suitable for the service industry bridging the identified knowledge gap detected in research concerning service innovations (Hipp & Grupp, 2005; OECD, 2005). The finalized suggested questionnaire (Appendix 3) is based upon theory, empirical and statistical testing and shows a strong reliability and validity hence the purpose of this study has been accomplished, the research question been answered and thus a contribution to innovation research has been made.

Further, as the questionnaire answer questions about factors enabling or hampering innovation in a service company, it also serves as a management tool for measuring innovation in the mentioned context and thus this study gives a managerial contribution as well.

### **6.1 Limitations**

As this study represents a first attempt to develop an innovation measuring tool in a service context, further studies are needed in this area in order to broaden the results found in this study and there are certain limitations in this particular case to acknowledge. Firstly, this study is based upon the use of one company implying that the result cannot be generalized as the sample is unsatisfactory in this matter. Secondly, although proven suitable, the study was conducted in a specific service sector, professional firms (HR), the results needs to be tested and extending into other businesses in the service context in order to validate that the suggested survey serves its purpose and thus can be used as a common innovation metrics in the service context. Lastly, the questionnaire is developed and presented only in Swedish, which limit the usage of the questionnaire in international settings.

### **6.2 Future research**

With basis in the limitations, future research is directed to empirically test the questionnaire further in other service businesses to remedy the validity and reliability of the suggested survey and thus further validate the measurements of this study. Moreover, a suggestion is to further test or add questions that were cut out of this particular survey creating additional constructs making the questionnaire even more extensive. Finally, in order to enlarge the resonance of this study, the questionnaire is suggested to be into translate into English.

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# Appendix 1 – Pre-test Survey

## LEVEL OF INNOVATION SURVEY

Din hjälp med ifyllandet av frågeformuläret ger ett unikt bidrag till forskning om hur ett företags nivå av innovation kan mätas. Alla svar behandlas konfidentiellt – resultaten presenteras endast i aggregerad form varvid inga enskilda individer kan identifieras.

De frågor du besvarar avser konceptet innovation och det finns inga rätta eller felaktiga svar på frågorna.

Tack för ditt deltagande.

### Definition av innovation för detta frågeformulär:

***”Innovation handlar om processen att tillämpa en principiellt ny idé. Innovation hänvisat till ansatsen att engagera sig i kreativitet och laborerande för att skapa en ny produkt, metod, affärsidé, lösning, tjänst etc.”***

### Jag är:

*Ringa in ett alternativ.*

Man

Kvinna

Övrigt

**Befattning:** \_\_\_\_\_

### Antal år inom företaget:

*Ringa in ett alternativ.*

<1

1-3

3-5

5-10

10<

## LEVEL OF INNOVATION SURVEY

I vilken utsträckning instämmer du i följande påståenden på en skala från 1 till 7, där 1 betyder "instämmer inte alls" och 7 betyder "instämmer helt"?

Övervakning av omgivning och konkurrenser	Instämmer inte alls						Instämmer helt		Vet ej
	1	2	3	4	5	6	7		
1. Vårt företag inspireras av konkurrenser	1	2	3	4	5	6	7	0	
2. Vårt företag är alltid uppdaterat på hur konkurrenser arbetar med innovation	1	2	3	4	5	6	7	0	
3. Vårt företag jämför sig med konkurrenser	1	2	3	4	5	6	7	0	
4. Vårt företag är alltid uppdaterat på hur konkurrenser innoverar nya funktioner	1	2	3	4	5	6	7	0	
5. Vårt företag jämför sig med andra industrier	1	2	3	4	5	6	7	0	
6. Vårt företag samarbetar med kunder i innovationsprocessen	1	2	3	4	5	6	7	0	
7. Vårt företag samarbetar med leverantörer i innovationsprocessen	1	2	3	4	5	6	7	0	
8. Vårt företag samarbetar med andra parter i innovationsprocessen	1	2	3	4	5	6	7	0	
9. Vårt företag vet vad som sker i omvärlden	1	2	3	4	5	6	7	0	
10. Vårt företag är alltid uppdaterat på hur konkurrenser expanderar genom nya innovationer	1	2	3	4	5	6	7	0	
11. Vårt företag har koll på trender	1	2	3	4	5	6	7	0	
12. Vårt företag reagerar vid förändring i omgivningen	1	2	3	4	5	6	7	0	
13. Vårt företag arbetar proaktivt genom att övervaka trender	1	2	3	4	5	6	7	0	
14. Vårt företag letar aktivt efter trender	1	2	3	4	5	6	7	0	
15. Vårt företag letar aktivt efter förändringar som sker i omgivningen	1	2	3	4	5	6	7	0	
16. Vårt företag vet vad våra kunder behöver	1	2	3	4	5	6	7	0	
17. Vårt företag vet vad våra kunder vill ha	1	2	3	4	5	6	7	0	
18. Vårt företag jobbar reaktivt mot kunder	1	2	3	4	5	6	7	0	
19. Vårt företag jobbar proaktivt mot kunder	1	2	3	4	5	6	7	0	

**Kommentarer:**

## LEVEL OF INNOVATION SURVEY

Institutionalisering av interaktion	Instämmer inte alls					Instämmer helt		Vet ej
	1	2	3	4	5	6	7	
20. På vårt företag pratas det om innovation varje dag	1	2	3	4	5	6	7	0
21. På vårt företag finns en innovationsvänlig kultur	1	2	3	4	5	6	7	0
22. Kulturen på vårt företag främjar innovation	1	2	3	4	5	6	7	0
23. Innovation är närvarande i hela företaget	1	2	3	4	5	6	7	0
24. Det finns ett regelbundet utbyte av idéer mellan anställda vid olika kontor/avdelningar	1	2	3	4	5	6	7	0
25. Alla är delaktiga i innovation på företaget	1	2	3	4	5	6	7	0
26. Det finns tydligt uttryckta mål för innovation i företagets strategi	1	2	3	4	5	6	7	0
27. Alla känner till företagets mål för innovation	1	2	3	4	5	6	7	0
28. Det finns ett fokus på innovation i företaget	1	2	3	4	5	6	7	0
29. Medarbetare får uttrycka sina åsikter fritt	1	2	3	4	5	6	7	0
30. Det finns ett regelbundet utbyte av idéer mellan högsta ledningen och övriga anställda inom företaget	1	2	3	4	5	6	7	0
31. Alla känner till företagets värderingar	1	2	3	4	5	6	7	0
32. Företagets värderingar genomsyrar hela företaget	1	2	3	4	5	6	7	0
33. Mina åsikter får gehör	1	2	3	4	5	6	7	0
34. Medarbetare får vara med och påverka	1	2	3	4	5	6	7	0
35. Anställda interagerar med varandra	1	2	3	4	5	6	7	0
36. Förmåga att fostra innovation finns på företaget	1	2	3	4	5	6	7	0
37. Vi är bra på att inkorporera utvecklade idéer över företaget	1	2	3	4	5	6	7	0

—Kommentarer:

## LEVEL OF INNOVATION SURVEY

Ledningens engagemang	Instämmer inte					Instämmer		Vet ej
	alls					helt		
38. Ledningen stöttar innovation	1	2	3	4	5	6	7	0
39. Vår högsta ledning uppmuntrar de anställda att utveckla nya idéer, processer och strategier	1	2	3	4	5	6	7	0
40. Ledningen tänker långsiktigt vad gäller innovation	1	2	3	4	5	6	7	0
41. Ledningen påvisar investering i innovation för resterande företag	1	2	3	4	5	6	7	0
42. Ledningen skapar engagemang för innovation	1	2	3	4	5	6	7	0
43. Vår högsta ledning diskuterar öppet nya idéer med de anställda	1	2	3	4	5	6	7	0
44. Ledningen förstår marknaden och kunderna	1	2	3	4	5	6	7	0
45. Ledningen analyserar systematiskt marknaden för nya teknologier och tjänster etc	1	2	3	4	5	6	7	0
46. Ledningen lyssnar på medarbetare	1	2	3	4	5	6	7	0
47. Ledningen stöttar medarbetare	1	2	3	4	5	6	7	0
48. Ledningen är intresserade av medarbetares tankar	1	2	3	4	5	6	7	0
49. Ledningen är intresserade av medarbetares idéer	1	2	3	4	5	6	7	0
50. Min chef lyssnar på mig	1	2	3	4	5	6	7	0
51. Min chef stöttar mig	1	2	3	4	5	6	7	0
52. Min chef är intresserad av mina tankar	1	2	3	4	5	6	7	0
53. Min chef uppmuntrar till nya idéer	1	2	3	4	5	6	7	0

### Kommentarer:

### Systematiskt tillvägagångssätt

	alls					helt		
54. Det finns metoder för att fånga och utvärdera idéer	1	2	3	4	5	6	7	0
55. Jag är medveten om hur arbetet med innovationsutveckling går till	1	2	3	4	5	6	7	0
56. Alla i företaget är medvetna om hur arbetet med innovationsutveckling går till	1	2	3	4	5	6	7	0

## LEVEL OF INNOVATION SURVEY

57. Det finns ett fungerande system för innovation	1	2	3	4	5	6	7	0
58. Det förs register över utmaningar och nyckellärdomar efter varje innovationsprojekt		2	3	4	5	6	7	0
59. Vårt företag mäter prestandan av innovation baserad på KPI	1	2	3	4	5	6	7	0
60. Alla i företaget är medvetna om de innovationsmål	1	2	3	4	5	6	7	0
61. Vårt företag analyserar i detalj skälen då prestationsmålen ej uppnås							/	0
62. Jag har utbildats i betydelsen av innovation	1	2	3	4	5	6	7	0
63. Alla anställda utbildas i innovation	1	2	3	4	5	6	7	0
64. Anställda har möjlighet att ta del av innovationsutbildningar	1	2	3	4	5	6	7	0
65. Anställda vill ta del av innovationsutbildningar	1	2	3	4	5	6	7	0
66. Idéer fångas upp och utvärderas kontinuerligt	1	2	3	4	5	6	7	0
67. Alla i företaget är medvetna om företagets innovationssystem	1	2	3	4	5	6	7	0
68. Innovation är tydligt uttryckt i företagets strategi	1	2	3	4	5	6	7	0
69. Företaget involverar andra involverade delar av organisationen i tidiga projekt	1	2	3	4	5	6	7	0
70. Det skapas tvärfunktionella grupper i innovationsprocessen	1	2	3	4	5	6	7	0
71. Vi jobbar över gränserna	1	2	3	4	5	6	7	0
72. Företaget hittar rätt kompetens för innovationsutveckling	1	2	3	4	5	6	7	0
73. Vårt företag fostrar en innovationsvänlig kultur	1	2	3	4	5	6	7	0
74. Vårt företag skapar en organisationsform som stöttar innovation	1	2	3	4	5	6	7	0
75. Företaget hittar finansiellt stöd för innovationsprojekt	1	2	3	4	5	6	7	0
76. Företaget samordnar interna resurser för innovation	1	2	3	4	5	6	7	0

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### Kommentarer:

## LEVEL OF INNOVATION SURVEY

### Organisatorisk prioritering

	Instämmer inte						Instämmer		Vet ej
	1	2	3	4	5	6	7	0	
77. Vårt företag är bra på innovation	1	2	3	4	5	6	7	0	
78. Företaget hittar tid för innovation	1	2	3	4	5	6	7	0	
79. Vårt företag prioriterar innovation	1	2	3	4	5	6	7	0	
80. Medarbetare på min avdelning skapar idéer på egenhand	1	2	3	4	5	6	7	0	
81. Vi skapar bra idégenerering genom att arbeta gränsöverskridande över hela företaget	1	2	3	4	5	6	7	0	
82. Idéer tar sig snabbt från tanke till verklighet	1	2	3	4	5	6	7	0	
83. Idéer tar sig långsamt från tanke till verklighet	1	2	3	4	5	6	7	0	
84. Företaget ger incitament för innovativa idéer	1	2	3	4	5	6	7	0	
85. Företaget ger projektstöd till innovationsprojekt	1	2	3	4	5	6	7	0	
86. Vi är bra på att upptäcka potentiella innovationer	1	2	3	4	5	6	7	0	
87. Vi är bra på att finansiera nya idéer	1	2	3	4	5	6	7	0	

### Kommentarer:

### Utrymmets begränsningar

	Instämmer inte alls						Instämmer helt		Vet ej
	1	2	3	4	5	6	7	0	
88. Det finns tillräckliga resurser för innovation	1	2	3	4	5	6	7	0	
89. Företaget avsätter tillräckligt med resurser för innovation	1	2	3	4	5	6	7	0	
90. Det finns tillräckligt med tid för innovation	1	2	3	4	5	6	7	0	
91. Företaget avsätter tillräckligt med tid för innovation	1	2	3	4	5	6	7	0	
92. Storleken på företaget är bra för innovation	1	2	3	4	5	6	7	0	
93. Det finns utrymme för innovation	1	2	3	4	5	6	7	0	
94. Det ges utrymme för innovation	1	2	3	4	5	6	7	0	
95. Företagets storlek hindrar innovation	1	2	3	4	5	6	7	0	
96. Nya idéer implementeras lätt	1	2	3	4	5	6	7	0	

## LEVEL OF INNOVATION SURVEY

97. Det finns för många idéer på företaget	1	2	3	4	5	6	7	0
98. Alla idéer får inte chansen att bli testade	1	2	3	4	5	6	7	0
99. Alla idéer hinner inte bli utvärderade	1	2	3	4	5	6	7	0
100. Idéer får chansen att bli testade	1	2	3	4	5	6	7	0

### Kommentarer:

Innovationsmotstånd	Instämmer inte alls							Instämmer helt	Vet ej
101. Innovation borde bli mer prioriterat i företaget	1	2	3	4	5	6	7	0	
102. Det är bra med nya idéer	1	2	3	4	5	6	7	0	
103. Innovation tar för stort fokus i företaget	1	2	3	4	5	6	7	0	
104. Om förändringsförslag kommer från medarbetare är jag benägen att anpassa mig	1	2	3	4	5	6	7	0	
105. Förändring är bra	1	2	3	4	5	6	7	0	
106. Jag känner mig hotad av nya idéer	1	2	3	4	5	6	7	0	
107. Förändring är roligt	1	2	3	4	5	6	7	0	
108. Förändring är spännande	1	2	3	4	5	6	7	0	
109. Om förändringsförslag kommer från ledningen är jag benägen att anpassa mig	1	2	3	4	5	6	7	0	
110. Förändring är jobbigt	1	2	3	4	5	6	7	0	
111. Förändring är dåligt	1	2	3	4	5	6	7	0	
112. Förändringar är bra så länge de inte rör mitt arbete	1	2	3	4	5	6	7	0	
113. Innovation är bra	1	2	3	4	5	6	7	0	
114. Innovation är roligt	1	2	3	4	5	6	7	0	
115. Förändringar får gärna ske i mitt arbete	1	2	3	4	5	6	7	0	
116. Om nya idéer kommer "nerifrån" är jag mindre benägen att anpassa mig	1	2	3	4	5	6	7	0	
117. Innovation är inte så viktigt	1	2	3	4	5	6	7	0	



118. Innovation är spännande	1	2	3	4	5	6	7	0
119. Innovation är viktigt	1	2	3	4	5	6	7	0
120. Idéer som rör mitt arbete ska komma från mig	1	2	3	4	5	6	7	0
121. Förändringar som rör mitt arbete ska komma från mig	1	2	3	4	5	6	7	0
122. Idéer som rör mitt arbete kan komma från andra	1	2	3	4	5	6	7	0
123. Jag upplever inget motstånd vid förändring	1	2	3	4	5	6	7	0
124. Det är ofta motstånd vid förändring	1	2	3	4	5	6	7	0
125. Det är sällan motstånd vid förändring	1	2	3	4	5	6	7	0

---

**Kommentarer:**

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# Appendix 2 – Pilot Survey

## *INNOVATION SURVEY*

---

### FRÅGEFORMULÄRETS SYFTE

---

Syftet med detta frågeformulär är att undersöka hur du som anställd på \_\_\_\_\_ ställer dig till och upplever innovation.

**Genom ditt deltagande bidrar du till** att \_\_\_\_\_ får en övergripande bild av de möjligheter och/eller hinder som finns gällande innovation. Du bidrar också till att ditt företag får ett konkret underlag att arbeta med för att förbättra och/eller ändra arbetssätt eller hantering vad gäller innovation.

Alla svar behandlas konfidentiellt – resultaten presenteras endast i aggregerad form varvid inga enskilda individer kan identifieras. Frågeformuläret består av 50 frågor och de frågor du besvarar avser konceptet innovation. Det finns inga rätta eller felaktiga svar på frågorna utan basera dina svar utifrån dig själv och din personliga uppfattning.

---

#### **Definition av innovation för detta frågeformulär:**

*”Innovation handlar om processen att tillämpa en principiellt ny idé. Innovation refererar till viljan att engagera sig i kreativitet och experimenterande för att skapa en ny tjänst, lösning eller metod.”*

---

I vilken utsträckning instämmer du i följande påståenden på en skala från 1 till 7, där 1 betyder "instämmer inte alls" och 7 betyder "instämmer helt"?

Kultur och samspel	Instämmer inte alls						Instämmer helt		Vet ej
	1	2	3	4	5	6	7		
1. På vårt företag finns en innovationsvänlig kultur	1	2	3	4	5	6	7	0	
2. Innovation är en viktig del av företagets värderingar	1	2	3	4	5	6	7	0	
3. Innovation är närvarande i hela företaget	1	2	3	4	5	6	7	0	
4. Alla är delaktiga i innovation på företaget	1	2	3	4	5	6	7	0	
5. Det finns goda möjligheter till samarbete mellan anställda på företaget	1	2	3	4	5	6	7	0	
6. Medarbetare får uttrycka sina idéer fritt	1	2	3	4	5	6	7	0	
7. Medarbetare får vara med och påverka	1	2	3	4	5	6	7	0	

Inställning till innovation	Instämmer inte alls						Instämmer helt		Vet ej
	1	2	3	4	5	6	7		
8. Innovation borde bli mer prioriterat i företaget	1	2	3	4	5	6	7	0	
9. Innovation får för stort fokus i företaget	1	2	3	4	5	6	7	0	
10. Det är bra med nya idéer	1	2	3	4	5	6	7	0	
11. Innovation är spännande	1	2	3	4	5	6	7	0	
12. Innovation är viktigt	1	2	3	4	5	6	7	0	
13. Förändring är spännande	1	2	3	4	5	6	7	0	
14. Om förändringsförslag kommer från ledningen är jag benägen att anpassa mig	1	2	3	4	5	6	7	0	
15. Om nya idéer kommer underifrån är jag inte benägen att anpassa mig	1	2	3	4	5	6	7	0	
16. Jag känner mig ofta hotad av nya idéer	1	2	3	4	5	6	7	0	
17. Idéer som innebär förändringar i mitt arbete kan komma från andra	1	2	3	4	5	6	7	0	

18. Förändringar får gärna ske i mitt arbete	1	2	3	4	5	6	7	0
19. Jag upplever motstånd mot förändring hos andra anställda i företaget	1	2	3	4	5	6	7	0

### Ledningens engagemang

	Instämmer inte alls					Instämmer helt		Vet ej
20. Vår högsta ledning uppmuntrar de anställda att utveckla nya idéer, processer och strategier	1	2	3	4	5	6	7	0
21. Det finns ett utbyte av idéer mellan högsta ledningen och övriga anställda inom företaget	1	2	3	4	5	6	7	0
22. Ledningen arbetar systematiskt med innovation	1	2	3	4	5	6	7	0
23. Vår högsta ledning ger utrymme att öppet diskutera nya idéer med de anställda	1	2	3	4	5	6	7	0
24. Ledningen är intresserad av medarbetares idéer	1	2	3	4	5	6	7	0
25. Ledningen är mottaglig för idéer som kommer från medarbetare	1	2	3	4	5	6	7	0

### Prioritering av innovation

	Instämmer inte alls					Instämmer helt		Vet ej
26. Vårt företag prioriterar innovation	1	2	3	4	5	6	7	0
27. Företaget är bra på att finansiera nya idéer	1	2	3	4	5	6	7	0
28. Företaget ger projektstöd i form av startkapital till innovationsprojekt	1	2	3	4	5	6	7	0
29. Idéer tar sig snabbt från tanke till verklighet i företaget	1	2	3	4	5	6	7	0
30. Företaget belönar bra idéer	1	2	3	4	5	6	7	0
31. Idéer får chansen att bli testade	1	2	3	4	5	6	7	0

### Systematiskt tillvägagångssätt

	Instämmer inte alls					Instämmer helt		Vet ej
--	---------------------	--	--	--	--	----------------	--	--------

32. Jag är medveten om hur arbetet med innovation går till på företaget	1	2	3	4	5	6	7	0
33. Innovation är tydligt uttryckt i företagets strategi	1	2	3	4	5	6	7	0
34. Företaget har utbildat mig i betydelsen av innovation	1	2	3	4	5	6	7	0
35. Jag anser att det finns ett fungerande tillvägagångssätt för arbetet med innovation på företaget	1	2	3	4	5	6	7	0
36. Det finns metoder inom företaget för att fånga upp och utvärdera idéer	1	2	3	4	5	6	7	0
37. Det finns dokumenterade innovationsprojekt att dra lärdom av	1	2	3	4	5	6	7	0
38. Jag anser att vi är bra på att införa idéer på företaget	1	2	3	4	5	6	7	0
39. Ledningen kommunicerar om de förändringar som sker på företaget	1	2	3	4	5	6	7	0
40. Jag anser att företaget skapar möjligheter för samarbete mellan avdelningar vid innovationsprojekt	1	2	3	4	5	6	7	0

### Omvärldsanalys

	Instämmer inte alls					Instämmer helt		Vet ej
41. Jag är uppdaterad på hur konkurrenter arbetar med innovation	1	2	3	4	5	6	7	0
42. Jag anser att det ingår i mina arbetsuppgifter att veta vad som sker i min bransch	1	2	3	4	5	6	7	0
43. Jag har koll på trender i omvärlden som rör mitt arbete	1	2	3	4	5	6	7	0
44. Genom att ha koll på trender i omvärlden arbetar jag proaktivt för att lösa kunders behov	1	2	3	4	5	6	7	0
45. Jag samarbetar med mina kunder för att utveckla nya idéer	1	2	3	4	5	6	7	0

### Begränsningar

	Instämmer inte alls					Instämmer helt		Vet ej
46. Det finns tillräckliga resurser för innovation	1	2	3	4	5	6	7	0

47. Det ges utrymme för innovation i företaget	1	2	3	4	5	6	7	0
48. Storleken på företaget har en positiv effekt på innovation	1	2	3	4	5	6	7	0
49. Storleken på företaget gör att det är lätt att anpassa sig till förändring	1	2	3	4	5	6	7	0
50. Nya idéer implementeras lätt i företaget	1	2	3	4	5	6	7	0

#### Daravariabler

##### 1. Jag är:

Ringa in ett alternativ.

Man                      Kvinna

##### 2. Befattning:

Ringa in ett alternativ.

Chef    HR/Administration                      Ekonomi                      Bemanning/Rekrytering                      Kompetensutveckling  
Övrigt

##### 3. Ålder:

Ringa in ett alternativ.

<30                      31-40                      41 -50                      51-60                      60<

##### 4. Antal år inom företaget:

Ringa in ett alternativ.

<1                      1-3                      4-7                      8-10                      10<

**Tack för din insats!**

# Appendix 3 – Statistically Supported Survey

## *INNOVATION SURVEY*

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### FRÅGEFORMULÄRETS SYFTE

---

Syftet med detta frågeformulär är att undersöka hur du som anställd på \_\_\_\_\_ ställer dig till och upplever innovation.

**Genom ditt deltagande bidrar du till** \_\_\_\_\_ får en övergripande bild av de möjligheter och/eller hinder som finns gällande innovation. Du bidrar också till att ditt företag får ett konkret underlag att arbeta med för att förbättra och/eller ändra arbetssätt eller hantering vad gäller innovation.

Alla svar behandlas konfidentiellt – resultaten presenteras endast i aggregerad form varvid inga enskilda individer kan identifieras. Frågeformuläret består av 50 frågor och de frågor du besvarar avser konceptet innovation. Det finns inga rätta eller felaktiga svar på frågorna utan basera dina svar utifrån dig själv och din personliga uppfattning.

---

#### **Definition av innovation för detta frågeformulär:**

*"Innovation handlar om processen att tillämpa en principiellt ny idé. Innovation refererar till viljan att engagera sig i kreativitet och experimenterande för att skapa en ny tjänst, lösning eller metod."*

---

I vilken utsträckning instämmer du i följande påståenden på en skala från 1 till 7, där 1 betyder "instämmer inte alls" och 7 betyder "instämmer helt"?

<b>Kultur och samspel</b>	Instämmer inte alls						Instämmer helt		Vet ej
1. På vårt företag finns en innovationsvänlig kultur	1	2	3	4	5	6	7	0	
2. Innovation är en viktig del av företagets värderingar	1	2	3	4	5	6	7	0	
3. Innovation är närvarande i hela företaget	1	2	3	4	5	6	7	0	
4. Alla är delaktiga i innovation på företaget	1	2	3	4	5	6	7	0	
5. Det finns goda möjligheter till samarbete mellan anställda på företaget	1	2	3	4	5	6	7	0	
6. Medarbetare får uttrycka sina idéer fritt	1	2	3	4	5	6	7	0	
7. Medarbetare får vara med och påverka	1	2	3	4	5	6	7	0	

<b>Inställning till innovation</b>	Instämmer inte alls						Instämmer helt		Vet ej
8. Det är bra med nya idéer	1	2	3	4	5	6	7	0	
9. Innovation är spännande	1	2	3	4	5	6	7	0	
10. Innovation är viktigt	1	2	3	4	5	6	7	0	
11. Förändring är spännande	1	2	3	4	5	6	7	0	
12. Om nya idéer kommer underifrån är jag inte benägen att anpassa mig	1	2	3	4	5	6	7	0	
13. Jag känner mig ofta hotad av nya idéer	1	2	3	4	5	6	7	0	
14. Förändringar får gärna ske i mitt arbete	1	2	3	4	5	6	7	0	

<b>Ledningens engagemang</b>	Instämmer inte alls						Instämmer helt		Vet ej
15. Vår högsta ledning uppmuntrar de anställda att utveckla nya idéer, processer och strategier	1	2	3	4	5	6	7	0	
16. Det finns ett utbyte av idéer mellan högsta ledningen och övriga anställda inom företaget	1	2	3	4	5	6	7	0	
17. Ledningen arbetar systematiskt med innovation	1	2	3	4	5	6	7	0	
18. Vår högsta ledning ger utrymme att öppet diskutera nya idéer med de anställda	1	2	3	4	5	6	7	0	
19. Ledningen är intresserad av medarbetares idéer	1	2	3	4	5	6	7	0	
20. Ledningen är mottaglig för idéer som kommer från medarbetare	1	2	3	4	5	6	7	0	



<b>Prioritering av innovation</b>	Instämmer inte alls					Instämmer helt		Vet ej
21. Vårt företag prioriterar innovation	1	2	3	4	5	6	7	0
22. Företaget är bra på att finansiera nya idéer	1	2	3	4	5	6	7	0
23. Företaget ger projektstöd i form av startkapital till innovationsprojekt	1	2	3	4	5	6	7	0
24. Idéer tar sig snabbt från tanke till verklighet i företaget	1	2	3	4	5	6	7	0
25. Idéer får chansen att bli testade	1	2	3	4	5	6	7	0

<b>Systematiskt tillvägagångssätt</b>	Instämmer inte alls					Instämmer helt		Vet ej
26. Jag är medveten om hur arbetet med innovation går till på företaget	1	2	3	4	5	6	7	0
27. Innovation är tydligt uttryckt i företagets strategi	1	2	3	4	5	6	7	0
28. Jag anser att det finns ett fungerande tillvägagångssätt för arbetet med innovation på företaget	1	2	3	4	5	6	7	0
29. Det finns metoder inom företaget för att fånga upp och utvärdera idéer	1	2	3	4	5	6	7	0
30. Det finns dokumenterade innovationsprojekt att dra lärdom av	1	2	3	4	5	6	7	0
31. Jag anser att vi är bra på att införa idéer på företaget	1	2	3	4	5	6	7	0
32. Ledningen kommunicerar om de förändringar som sker på företaget	1	2	3	4	5	6	7	0
33. Jag anser att företaget skapar möjligheter för samarbete mellan avdelningar vid innovationsprojekt	1	2	3	4	5	6	7	0

<b>Omvärldsanalys</b>	Instämmer inte alls					Instämmer helt		Vet ej
34. Jag anser att det ingår i mina arbetsuppgifter att veta vad som sker i min bransch	1	2	3	4	5	6	7	0
35. Jag har koll på trender i omvärlden som rör mitt arbete	1	2	3	4	5	6	7	0
36. Genom att ha koll på trender i omvärlden arbetar jag proaktivt för att lösa kunders behov	1	2	3	4	5	6	7	0
37. Jag samarbetar med mina kunder för att utveckla nya idéer	1	2	3	4	5	6	7	0

## Begränsningar

	Instämmer inte alls					Instämmer helt			Vet ej
38. Det finns tillräckliga resurser för innovation	1	2	3	4	5	6	7	0	
39. Det ges utrymme för innovation i företaget	1	2	3	4	5	6	7	0	
40. Storleken på företaget har en positiv effekt på innovation	1	2	3	4	5	6	7	0	
41. Storleken på företaget gör att det är lätt att anpassa sig till förändring	1	2	3	4	5	6	7	0	
42. Nya idéer implementeras lätt i företaget	1	2	3	4	5	6	7	0	

## Datavariabler

### 1. Jag är:

*Ringa in ett alternativ.*

Man                      Kvinna

### 2. Befattning:

*Ringa in ett alternativ.*

Chef      HR/Administration      Ekonomi      Bemanning/Rekrytering      Kompetensutveckling  
Övrigt

### 3. Ålder:

*Ringa in ett alternativ.*

<30                      31-40                      41 -50                      51-60                      60<

### 4. Antal år inom företaget:

*Ringa in ett alternativ.*

<1                      1-3                      4-7                      8-10                      10<

**Tack för din insats!**

# Appendix 4 – Factor Analysis

## Theme 1 – Culture and Interaction

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,783
Approx. Chi-Square		220,192
Bartlett's Test of Sphericity	df	21
	Sig.	,000

### Communalities

	Initial	Extraction
VARQ1	1,000	,684
VARQ2	1,000	,610
VARQ3	1,000	,740
VARQ4	1,000	,833
VARQ5	1,000	,753
VARQ6	1,000	,738
VARQ7	1,000	,693

Extraction Method: Principal

Component Analysis.

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,899	55,695	55,695	3,899	55,695	55,695	2,647	37,810	37,810
2	1,152	16,450	72,145	1,152	16,450	72,145	2,403	34,335	72,145
3	,721	10,299	82,444						
4	,460	6,567	89,011						
5	,320	4,577	93,588						
6	,250	3,573	97,161						
7	,199	2,839	100,000						

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ1	,771	
VARQ2	,587	,515
VARQ3	,724	-,464
VARQ4	,705	-,579
VARQ5	,832	
VARQ6	,804	
VARQ7	,774	

Extraction Method: Principal

Component Analysis.

a. 2 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ1	,770	
VARQ2	,781	
VARQ3		,831
VARQ4		,903
VARQ5	,780	,379
VARQ6	,798	
VARQ7	,364	,748

Extraction Method: Principal

Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

a. Rotation converged in 3 iterations.

**Component Transformation Matrix**

Component	1	2
1	,738	,675
2	,675	-,738

## Factor Analysis

Extraction Method: Principal Component

Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

RELIABILITY

/VARIABLES=VARQ1 VARQ2 VARQ3

VARQ4 VARQ5 VARQ6 VARQ7

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

## Reliability

**Scale: ALL VARIABLES**

**Case Processing Summary**

		N	%
Cases	Valid	63	91,3
	Excluded <sup>a</sup>	6	8,7
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,866	7

FACTOR

/VARIABLES VARQ1 VARQ2 VARQ5

VARQ6

/MISSING LISTWISE

/ANALYSIS VARQ1 VARQ2 VARQ5

VARQ6

/PRINT INITIAL KMO EXTRACTION

ROTATION

/FORMAT BLANK(.32)

/CRITERIA MINEIGEN(1)

ITERATE(25)

/EXTRACTION PC

/CRITERIA ITERATE(25)

/ROTATION VARIMAX

/METHOD=CORRELATION.

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,778
Approx. Chi-Square		107,195
Bartlett's Test of Sphericity	df	6
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ1	1,000	,707
VARQ2	1,000	,512
VARQ5	1,000	,757
VARQ6	1,000	,735

Extraction Method: Principal  
Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,711	67,777	67,777	2,711	67,777	67,777
2	,613	15,320	83,097			
3	,409	10,217	93,314			
4	,267	6,686	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ1	,841
VARQ2	,715
VARQ5	,870
VARQ6	,857

Extraction Method: Principal  
Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```

/VARIABLES VARQ3 VARQ4 VARQ7
/MISSING LISTWISE
/ANALYSIS VARQ3 VARQ4 VARQ7
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK (.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
    
```

**Reliability**

**Scale: ALL VARIABLES**

**Factor Analysis**

**Case Processing Summary**

		N	%
Cases	Valid	64	92,8
	Excluded <sup>a</sup>	5	7,2
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,701
Bartlett's Test of Sphericity	Approx. Chi-Square	73,788
	df	3
	Sig.	,000

**Reliability Statistics**

Cronbach's Alpha	N of Items
,760	11

**Communalities**

	Initial	Extraction
VARQ3	1,000	,781
VARQ4	1,000	,801
VARQ7	1,000	,670

Extraction Method: Principal Component Analysis.

FACTOR

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,252	75,074	75,074	2,252	75,074	75,074
2	,472	15,721	90,794			
3	,276	9,206	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ3	,884
VARQ4	,895
VARQ7	,818

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```
RELIABILITY
/VARIABLES=VARQ3 VARQ4 VARQ7
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Scale: ALL VARIABLES

**Case Processing Summary**

	N	%
Valid	63	91,3
Cases Excluded <sup>a</sup>	6	8,7
Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,829	3

```
FACTOR
/VARIABLES VARQ8 VARQ9R VARQ10
VARQ11 VARQ12 VARQ13 VARQ14 VARQ15
VARQ16 VARQ17 VARQ18 VARQ19
/MISSING LISTWISE
/ANALYSIS VARQ8 VARQ9R VARQ10
VARQ11 VARQ12 VARQ13 VARQ14 VARQ15
VARQ16 VARQ17 VARQ18 VARQ19
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

## Reliability Theme 2 – Attitude to Innovation

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,832
Approx. Chi-Square		507,679
Bartlett's Test of Sphericity	df	66
Sig.		,000

**Communalities**

	Initial	Extraction
VARQ8	1,000	,686
VARQ9R	1,000	,831
VARQ10	1,000	,821
VARQ11	1,000	,899
VARQ12	1,000	,886
VARQ13	1,000	,889
VARQ14	1,000	,679
VARQ15	1,000	,685
VARQ16	1,000	,788
VARQ17	1,000	,692
VARQ18	1,000	,752
VARQ19	1,000	,880

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,708	47,563	47,563	5,708	47,563	47,563	5,025	41,878	41,878
2	1,531	12,761	60,324	1,531	12,761	60,324	1,830	15,248	57,126
3	1,157	9,641	69,965	1,157	9,641	69,965	1,465	12,207	69,333
4	1,093	9,111	79,076	1,093	9,111	79,076	1,169	9,742	79,076
5	,650	5,417	84,492						
6	,487	4,055	88,547						
7	,379	3,161	91,708						
8	,369	3,079	94,787						
9	,293	2,443	97,230						
10	,163	1,357	98,587						
11	,101	,841	99,428						
12	,069	,572	100,000						

Extraction Method: Principal Component Analysis.



**Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
VARQ8	,432	-,579		-,394
VARQ9R			,650	,628
VARQ10	,846			
VARQ11	,923			
VARQ12	,926			
VARQ13	,936			
VARQ14	,680			,441
VARQ15	,505	,571	-,321	
VARQ16		,810		
VARQ17	,781			
VARQ18	,829			
VARQ19	,330		-,651	,522

Extraction Method: Principal Component Analysis.  
a. 4 components extracted.

**Component Transformation Matrix**

Component	1	2	3	4
1	,920	,271	,269	-,091
2	-,223	,952	-,143	,154
3	,304	-,136	-,684	,649
4	-,107	-,046	,663	,740

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser  
Normalization.

**RELIABILITY**

```

/VARIABLES=VARQ8 VARQ9R VARQ10
VARQ11 VARQ12 VARQ13 VARQ14 VARQ15
VARQ16 VARQ17 VARQ18 VARQ19
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
    
```

**Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
VARQ8	,540	-,404		-,480
VARQ9R				,894
VARQ10	,902			
VARQ11	,928			
VARQ12	,917			
VARQ13	,894			
VARQ14	,524		,521	
VARQ15		,725		
VARQ16		,844		
VARQ17	,608	,422	,356	
VARQ18	,827			
VARQ19			,919	

Extraction Method: Principal Component Analysis.  
Rotation Method: Varimax with Kaiser  
Normalization.  
a. Rotation converged in 5 iterations.

**Reliability**

**Scale: ALL VARIABLES**

**Case Processing Summary**

		N	%
Cases	Valid	64	92,8
	Excluded <sup>a</sup>	5	7,2
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,796	12

**FACTOR**

```

/VARIABLES VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ17 VARQ18 VARQ19
/MISSING LISTWISE
    
```

```

/ANALYSIS VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ17 VARQ18 VARQ19
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)

```

```

/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.

```

## Factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,827
Bartlett's Test of Sphericity	Approx. Chi-Square	484,798
	df	55
	Sig.	,000

	Initial	Extraction
VARQ9R	1,000	,366
VARQ10	1,000	,788
VARQ11	1,000	,873
VARQ12	1,000	,876
VARQ13	1,000	,894
VARQ14	1,000	,519
VARQ15	1,000	,702
VARQ16	1,000	,807
VARQ17	1,000	,688
VARQ18	1,000	,757
VARQ19	1,000	,794

Extraction Method: Principal Component Analysis.

## Communalities

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,550	50,456	50,456	5,550	50,456	50,456	5,089	46,262	46,262
2	1,361	12,377	62,833	1,361	12,377	62,833	1,643	14,938	61,200
3	1,154	10,493	73,326	1,154	10,493	73,326	1,334	12,126	73,326
4	,960	8,728	82,055						
5	,554	5,038	87,093						
6	,403	3,665	90,758						
7	,378	3,436	94,194						
8	,299	2,718	96,912						
9	,168	1,527	98,439						
10	,103	,934	99,373						
11	,069	,627	100,000						

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ9R			,532
VARQ10	,836		
VARQ11	,914		
VARQ12	,919		
VARQ13	,936		
VARQ14	,697		
VARQ15	,521	,594	
VARQ16		,824	
VARQ17	,790		
VARQ18	,835		
VARQ19	,325	-,364	-,746

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ9R			-,523
VARQ10	,888		
VARQ11	,927		
VARQ12	,927		
VARQ13	,928		
VARQ14	,640		
VARQ15		,713	,336
VARQ16		,874	
VARQ17	,666	,355	,345
VARQ18	,843		
VARQ19			,820

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

**Component Transformation Matrix**

Component	1	2	3
1	,945	,259	,202
2	-,250	,966	-,070
3	,213	-,016	-,977

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

RELIABILITY

/VARIABLES=VARQ9R VARQ10 VARQ11  
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16  
VARQ17 VARQ18 VARQ19

/SCALE('ALL VARIABLES') ALL

/MODEL=ALPHA.

## Reliability

### Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	64	92,8
	Excluded <sup>a</sup>	5	7,2
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,798	11

FACTOR

/VARIABLES VARQ9R VARQ10 VARQ11  
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16  
VARQ18 VARQ19 VARQ8

/MISSING LISTWISE

/ANALYSIS VARQ9R VARQ10 VARQ11  
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16  
VARQ18 VARQ19 VARQ8

/PRINT INITIAL KMO EXTRACTION  
ROTATION

/FORMAT BLANK(.32)

/CRITERIA MINEIGEN(1)

ITERATE(25)

/EXTRACTION PC  
 /ROTATION VARIMAX  
 /METHOD=CORRELATION.

/CRITERIA ITERATE(25)

## Factor Analysis

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,801
Bartlett's Test of Sphericity	Approx. Chi-Square	458,918
	df	55
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ9R	1,000	,835
VARQ10	1,000	,822
VARQ11	1,000	,904
VARQ12	1,000	,895
VARQ13	1,000	,890
VARQ14	1,000	,697
VARQ15	1,000	,689
VARQ16	1,000	,804
VARQ18	1,000	,750
VARQ19	1,000	,891
VARQ8	1,000	,684

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,145	46,776	46,776	5,145	46,776	46,776	4,666	42,415	42,415
2	1,501	13,645	60,421	1,501	13,645	60,421	1,673	15,205	57,620
3	1,126	10,234	70,655	1,126	10,234	70,655	1,363	12,393	70,013
4	1,088	9,894	80,549	1,088	9,894	80,549	1,159	10,536	80,549
5	,650	5,909	86,458						
6	,466	4,234	90,691						
7	,379	3,446	94,137						
8	,309	2,812	96,949						
9	,163	1,480	98,429						
10	,104	,943	99,372						
11	,069	,628	100,000						

Extraction Method: Principal Component Analysis.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

a. Rotation converged in 5 iterations.

**Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
VARQ9R			,794	,438
VARQ10	,860			
VARQ11	,935			
VARQ12	,939			
VARQ13	,939			
VARQ14	,675			,473
VARQ15	,477	,559	-,378	
VARQ16		,836		
VARQ18	,831			
VARQ19		-,322	-,489	,668
VARQ8	,454	-,561		-,371

Extraction Method: Principal Component Analysis.

a. 4 components extracted.

**Component Transformation Matrix**

Component	1	2	3	4
1	,937	,228	,248	-,089
2	-,161	,949	-,198	,186
3	,257	-,216	-,483	,809
4	-,172	,033	,816	,551

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

RELIABILITY

```

/VARIABLES=VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ18 VARQ19 VARQ8
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.

```

**Rotated Component Matrix<sup>a</sup>**

	Component			
	1	2	3	4
VARQ9R				,897
VARQ10	,903			
VARQ11	,929			
VARQ12	,919			
VARQ13	,895			
VARQ14	,526		,536	
VARQ15		,723		
VARQ16		,858		
VARQ18	,828			
VARQ19			,925	
VARQ8	,537	-,406		-,480

## Reliability

### Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	64	92,8
	Excluded <sup>a</sup>	5	7,2
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,760	11

```

FACTOR
/VARIABLES VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ18 VARQ19
/MISSING LISTWISE
/ANALYSIS VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ18 VARQ19
/METHOD=CORRELATION.

```

```

/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX

```

## Factor Analysis

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,793
Bartlett's Test of Sphericity	Approx. Chi-Square	435,603
	df	45
	Sig.	,000

### Communalities

	Initial	Extraction
VARQ9R	1,000	,419
VARQ10	1,000	,787
VARQ11	1,000	,880
VARQ12	1,000	,886
VARQ13	1,000	,895
VARQ14	1,000	,523
VARQ15	1,000	,693
VARQ16	1,000	,816
VARQ18	1,000	,754
VARQ19	1,000	,786

Extraction Method: Principal Component Analysis.

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,974	49,745	49,745	4,974	49,745	49,745	4,656	46,561	46,561
2	1,345	13,448	63,193	1,345	13,448	63,193	1,543	15,433	61,993
3	1,121	11,205	74,398	1,121	11,205	74,398	1,240	12,405	74,398
4	,958	9,583	83,981						
5	,551	5,506	89,487						
6	,380	3,799	93,286						
7	,328	3,281	96,567						
8	,168	1,680	98,248						
9	,106	1,057	99,305						
10	,070	,695	100,000						

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ9R			,601
VARQ10	,851		
VARQ11	,928		
VARQ12	,933		
VARQ13	,942		
VARQ14	,696		
VARQ15	,496	,569	-,351
VARQ16		,849	
VARQ18	,840		
VARQ19		-,436	-,705

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ9R			-,560
VARQ10	,887		
VARQ11	,928		
VARQ12	,929		
VARQ13	,927		
VARQ14	,644		
VARQ15		,712	,324
VARQ16		,879	
VARQ18	,841		
VARQ19			,814

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

**Component Transformation Matrix**

Component	1	2	3
1	,957	,236	,171
2	-,206	,962	-,177
3	,206	-,134	-,969

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

```
RELIABILITY
/VARIABLES=VARQ9R VARQ10 VARQ11
VARQ12 VARQ13 VARQ14 VARQ15 VARQ16
VARQ18 VARQ19
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Reliability

**Scale: ALL VARIABLES**

### Case Processing Summary

		N	%
Cases	Valid	64	92,8
	Excluded <sup>a</sup>	5	7,2
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
,761	10

```
FACTOR
/VARIABLES VARQ10 VARQ11 VARQ12
VARQ13 VARQ14 VARQ15 VARQ16 VARQ18
VARQ19
/MISSING LISTWISE
/ANALYSIS VARQ10 VARQ11 VARQ12
VARQ13 VARQ14 VARQ15 VARQ16 VARQ18
VARQ19
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
```

/ROTATION VARIMAX  
/METHOD=CORRELATION.

## Factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,813
Bartlett's Test of Sphericity	Approx. Chi-Square	440,518
	df	36
	Sig.	,000

	Initial	Extraction
VARQ10	1,000	,830
VARQ11	1,000	,903
VARQ12	1,000	,888
VARQ13	1,000	,896
VARQ14	1,000	,581
VARQ15	1,000	,757
VARQ16	1,000	,845
VARQ18	1,000	,755
VARQ19	1,000	,900

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,995	55,505	55,505	4,995	55,505	55,505	4,383	48,701	48,701
2	1,308	14,536	70,041	1,308	14,536	70,041	1,611	17,899	66,600
3	1,052	11,692	81,733	1,052	11,692	81,733	1,362	15,133	81,733
4	,585	6,504	88,237						
5	,386	4,291	92,528						
6	,326	3,620	96,148						
7	,167	1,855	98,002						
8	,106	1,179	99,181						
9	,074	,819	100,000						

Extraction Method: Principal Component Analysis.



**Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ10	,852		
VARQ11	,927		
VARQ12	,933		
VARQ13	,942		
VARQ14	,692		
VARQ15	,505	,558	,436
VARQ16		,862	
VARQ18	,844		
VARQ19	,330	-,435	,776

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component		
	1	2	3
VARQ10	,910		
VARQ11	,933		
VARQ12	,908		
VARQ13	,898		
VARQ14	,536		,483
VARQ15		,791	
VARQ16		,887	
VARQ18	,836		
VARQ19			,941

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

**Component Transformation Matrix**

Component	1	2	3
1	,918	,298	,262
2	-,181	,901	-,394
3	-,353	,314	,881

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

RELIABILITY

```

/VARIABLES=VARQ10 VARQ11 VARQ12
VARQ13 VARQ14 VARQ15 VARQ16 VARQ18
VARQ19
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
    
```

## Reliability

### Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	65	94,2
	Excluded <sup>a</sup>	4	5,8
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,825	9

FACTOR

```

/VARIABLES VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18 VARQ19
/MISSING LISTWISE
/ANALYSIS VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18 VARQ19
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
    
```

## Factor Analysis

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,788
Bartlett's Test of Sphericity	Approx. Chi-Square	403,737
	df	28
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ10	1,000	,796
VARQ11	1,000	,906
VARQ12	1,000	,879
VARQ13	1,000	,887
VARQ15	1,000	,577
VARQ16	1,000	,845
VARQ18	1,000	,731
VARQ19	1,000	,258

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,573	57,166	57,166	4,573	57,166	57,166	4,312	53,895	53,895
2	1,306	16,324	73,490	1,306	16,324	73,490	1,568	19,596	73,490
3	,998	12,478	85,968						
4	,423	5,291	91,259						
5	,326	4,073	95,332						
6	,191	2,386	97,718						
7	,108	1,349	99,067						
8	,075	,933	100,000						

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ10	,871	
VARQ11	,941	
VARQ12	,933	
VARQ13	,938	
VARQ15	,507	,566
VARQ16		,863
VARQ18	,854	
VARQ19		-,409

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ10	,890	
VARQ11	,943	
VARQ12	,922	
VARQ13	,923	
VARQ15	,326	,686
VARQ16		,917
VARQ18	,809	
VARQ19	,406	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Component Transformation Matrix**

Component	1	2
1	,959	,283
2	-,283	,959

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

```
RELIABILITY
/VARIABLES=VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18 VARQ19
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Reliability

### Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	65	94,2
	Excluded <sup>a</sup>	4	5,8
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,807	8

```
FACTOR
/VARIABLES VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18
/MISSING LISTWISE
/ANALYSIS VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
```

/METHOD=CORRELATION.

## Factor Analysis

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,850
Bartlett's Test of Sphericity	Approx. Chi-Square	392,195
	df	21
	Sig.	,000

	Initial	Extraction
VARQ10	1,000	,820
VARQ11	1,000	,912
VARQ12	1,000	,888
VARQ13	1,000	,880
VARQ15	1,000	,711
VARQ16	1,000	,786
VARQ18	1,000	,729

Extraction Method: Principal Component Analysis.

### Communalities

#### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,485	64,066	64,066	4,485	64,066	64,066	4,129	58,981	58,981
2	1,242	17,742	81,808	1,242	17,742	81,808	1,598	22,827	81,808
3	,508	7,254	89,061						
4	,362	5,168	94,229						
5	,214	3,052	97,281						
6	,107	1,533	98,815						
7	,083	1,185	100,000						

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ10	,868	
VARQ11	,938	
VARQ12	,934	
VARQ13	,933	
VARQ15	,504	,676
VARQ16	,354	,813
VARQ18	,853	

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

```
RELIABILITY
/VARIABLES=VARQ10 VARQ11 VARQ12
VARQ13 VARQ15 VARQ16 VARQ18
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Reliability

### Scale: ALL VARIABLES

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ10	,904	
VARQ11	,944	
VARQ12	,923	
VARQ13	,913	
VARQ15		,805
VARQ16		,884
VARQ18	,816	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser

Normalization.

a. Rotation converged in 3 iterations.

**Case Processing Summary**

		N	%
Cases	Valid	67	97,1
	Excluded <sup>a</sup>	2	2,9
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,831	7

**Component Transformation Matrix**

Component	1	2
1	,944	,331
2	-,331	,944

```
FACTOR
/VARIABLES VARQ20 VARQ21 VARQ22
VARQ23 VARQ24 VARQ25
/MISSING LISTWISE
/ANALYSIS VARQ20 VARQ21 VARQ22
VARQ23 VARQ24 VARQ25
/PRINT INITIAL KMO EXTRACTION
ROTATION
```

/FORMAT BLANK (.32)  
 /CRITERIA MINEIGEN(1)  
 ITERATE (25)  
 /EXTRACTION PC

/CRITERIA ITERATE (25)  
 /ROTATION VARIMAX  
 /METHOD=CORRELATION.

### Theme 3 – Top Management Commitment

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,831
Bartlett's Test of Sphericity	Approx. Chi-Square	214,099
	df	15
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ20	1,000	,523
VARQ21	1,000	,833
VARQ22	1,000	,572
VARQ23	1,000	,673
VARQ24	1,000	,868
VARQ25	1,000	,682

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,151	69,180	69,180	4,151	69,180	69,180
2	,683	11,386	80,566			
3	,616	10,265	90,831			
4	,288	4,794	95,625			
5	,171	2,855	98,480			
6	,091	1,520	100,000			

Extraction Method: Principal Component Analysis.

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ20	,723
VARQ21	,913
VARQ22	,756
VARQ23	,820
VARQ24	,932
VARQ25	,826

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

RELIABILITY

/VARIABLES=VARQ20 VARQ21 VARQ22  
VARQ23 VARQ24 VARQ25

/SCALE('ALL VARIABLES') ALL  
/MODEL=ALPHA.

## Reliability

### Scale: ALL VARIABLES

#### Reliability Statistics

Cronbach's Alpha	N of Items
,906	6

#### Case Processing Summary

		N	%
Cases	Valid	48	69,6
	Excluded <sup>a</sup>	21	30,4
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

```

FACTOR
/VARIABLES VARQ26 VARQ27 VARQ28
VARQ29 VARQ30 VARQ31
/MISSING LISTWISE
/ANALYSIS VARQ26 VARQ27 VARQ28
VARQ29 VARQ30 VARQ31
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.

```

## Theme 4 – Innovation Priority

#### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,763
Approx. Chi-Square		121,646
Bartlett's Test of Sphericity	df	15
	Sig.	,000

#### Communalities

	Initial	Extraction
VARQ26	1,000	,538
VARQ27	1,000	,774
VARQ28	1,000	,800
VARQ29	1,000	,593
VARQ30	1,000	,248
VARQ31	1,000	,683

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,636	60,601	60,601	3,636	60,601	60,601
2	,861	14,350	74,951			
3	,573	9,548	84,500			
4	,535	8,911	93,410			
5	,295	4,914	98,324			
6	,101	1,676	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ26	,733
VARQ27	,880
VARQ28	,895
VARQ29	,770
VARQ30	,498
VARQ31	,826

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```
RELIABILITY
/VARIABLES=VARQ26 VARQ27 VARQ28
VARQ29 VARQ30 VARQ31
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

**Reliability**

**Scale: ALL VARIABLES**

**Case Processing Summary**

		N	%
Cases	Valid	38	55,1
	Excluded <sup>a</sup>	31	44,9
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,862	6

```
FACTOR
/VARIABLES VARQ26 VARQ27 VARQ28
VARQ29 VARQ31
/MISSING LISTWISE
/ANALYSIS VARQ26 VARQ27 VARQ28
VARQ29 VARQ31
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
```



### Factor Analysis

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,754
Bartlett's Test of Sphericity	Approx. Chi-Square	119,536
	df	10
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ26	1,000	,548
VARQ27	1,000	,780
VARQ28	1,000	,792
VARQ29	1,000	,616
VARQ31	1,000	,714

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,450	69,001	69,001	3,450	69,001	69,001
2	,596	11,930	80,930			
3	,555	11,098	92,028			
4	,297	5,937	97,965			
5	,102	2,035	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ26	,741
VARQ27	,883
VARQ28	,890
VARQ29	,785
VARQ31	,845

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```
RELIABILITY
/VARIABLES=VARQ26 VARQ27 VARQ28
VARQ29 VARQ31
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Reliability

Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	39	56,5
	Excluded <sup>a</sup>	30	43,5
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,887	5

```

FACTOR
  /VARIABLES VARQ32 VARQ33 VARQ34
VARQ35 VARQ36 VARQ37 VARQ38 VARQ39
VARQ40
  /MISSING LISTWISE
  /ANALYSIS VARQ32 VARQ33 VARQ34
VARQ35 VARQ36 VARQ37 VARQ38 VARQ39
VARQ40
  /PRINT INITIAL KMO EXTRACTION
ROTATION
  /FORMAT BLANK(.32)
  /CRITERIA MINEIGEN(1)
ITERATE(25)
  /EXTRACTION PC
  /CRITERIA ITERATE(25)
  /ROTATION VARIMAX
  /METHOD=CORRELATION.
    
```

## Theme 5 – Systematic Approach

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,872
Approx. Chi-Square		273,051
Bartlett's Test of Sphericity	df	36
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ32	1,000	,713
VARQ33	1,000	,588
VARQ34	1,000	,373
VARQ35	1,000	,798
VARQ36	1,000	,752
VARQ37	1,000	,507
VARQ38	1,000	,694
VARQ39	1,000	,625
VARQ40	1,000	,717

Extraction Method: Principal Component Analysis.

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,768	64,086	64,086	5,768	64,086	64,086
2	,865	9,613	73,698			
3	,674	7,489	81,187			
4	,507	5,628	86,816			
5	,382	4,250	91,066			
6	,329	3,654	94,719			
7	,212	2,358	97,077			
8	,142	1,579	98,656			
9	,121	1,344	100,000			

Extraction Method: Principal Component Analysis.

### Component Matrix<sup>a</sup>

	Component
	1
VARQ32	,844
VARQ33	,767
VARQ34	,610
VARQ35	,894
VARQ36	,867
VARQ37	,712
VARQ38	,833
VARQ39	,790
VARQ40	,847

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

### Rotated Component Matrix<sup>a</sup>

--

a. Only one component was extracted. The solution cannot be rotated.

### RELIABILITY

```

/VARIABLES=VARQ32 VARQ33 VARQ34
VARQ35 VARQ36 VARQ37 VARQ38 VARQ39
VARQ40
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.

```

### Reliability

### Scale: ALL VARIABLES

### Case Processing Summary

		N	%
Cases	Valid	43	62,3
	Excluded <sup>a</sup>	26	37,7
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

### Reliability Statistics

Cronbach's Alpha	N of Items
,924	9

FACTOR  
 /VARIABLES VARQ32 VARQ33 VARQ35  
 VARQ36 VARQ37 VARQ38 VARQ39 VARQ40  
 /MISSING LISTWISE  
 /ANALYSIS VARQ32 VARQ33 VARQ35  
 VARQ36 VARQ37 VARQ38 VARQ39 VARQ40

/PRINT INITIAL KMO EXTRACTION  
 ROTATION  
 /FORMAT BLANK(.32)  
 /CRITERIA MINEIGEN(1)  
 ITERATE(25)  
 /EXTRACTION PC  
 /CRITERIA ITERATE(25)  
 /ROTATION VARIMAX  
 /METHOD=CORRELATION.

## Factor Analysis

**KMO and Bartlett's Test**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,879
Bartlett's Test of Sphericity	Approx. Chi-Square	253,816
	df	28
	Sig.	,000

**Communalities**

	Initial	Extraction
VARQ32	1,000	,711
VARQ33	1,000	,559
VARQ35	1,000	,804
VARQ36	1,000	,761
VARQ37	1,000	,511
VARQ38	1,000	,709
VARQ39	1,000	,637
VARQ40	1,000	,748

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5,439	67,989	67,989	5,439	67,989	67,989
2	,712	8,901	76,891			
3	,595	7,444	84,334			
4	,395	4,936	89,270			
5	,363	4,540	93,811			
6	,217	2,714	96,525			
7	,155	1,934	98,458			
8	,123	1,542	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ32	,843
VARQ33	,747
VARQ35	,896
VARQ36	,873
VARQ37	,715
VARQ38	,842
VARQ39	,798
VARQ40	,865

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```
RELIABILITY
/VARIABLES=VARQ32 VARQ33 VARQ35
VARQ36 VARQ37 VARQ38 VARQ39 VARQ40
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

## Reliability

### Scale: ALL VARIABLES

**Case Processing Summary**

		N	%
Cases	Valid	43	62,3
	Excluded <sup>a</sup>	26	37,7
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,930	8

```
FACTOR
/VARIABLES VARQ41 VARQ42 VARQ43 VARQ44 VARQ45
/MISSING LISTWISE
/ANALYSIS VARQ41 VARQ42 VARQ43 VARQ44 VARQ45
/PRINT INITIAL KMO EXTRACTION ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

## Theme 6 – Contextual Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,722
Bartlett's Test of Sphericity	Approx. Chi-Square	197,442
	df	10
	Sig.	,000

	Initial	Extraction
VARQ41	1,000	,962
VARQ42	1,000	,683
VARQ43	1,000	,792
VARQ44	1,000	,926
VARQ45	1,000	,798

Extraction Method: Principal Component Analysis.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,148	62,966	62,966	3,148	62,966	62,966	3,004	60,083	60,083
2	1,012	20,234	83,200	1,012	20,234	83,200	1,156	23,117	83,200
3	,437	8,744	91,945						
4	,309	6,181	98,125						
5	,094	1,875	100,000						

Extraction Method: Principal Component Analysis.

	Component	
	1	2
VARQ41	,321	,927
VARQ42	,814	
VARQ43	,869	
VARQ44	,956	
VARQ45	,845	

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

## Reliability

### Scale: ALL VARIABLES

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
VARQ41		,978
VARQ42	,823	
VARQ43	,789	,411
VARQ44	,951	
VARQ45	,891	

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Component Transformation Matrix**

Component	1	2
1	,966	,260
2	-,260	,966

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

```
RELIABILITY
/VARIABLES=VARQ41 VARQ42 VARQ43
VARQ44 VARQ45
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.
```

**Case Processing Summary**

		N	%
Cases	Valid	65	94,2
	Excluded <sup>a</sup>	4	5,8
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

**Reliability Statistics**

Cronbach's Alpha	N of Items
,818	5

```
FACTOR
/VARIABLES VARQ42 VARQ43 VARQ44
VARQ45
/MISSING LISTWISE
/ANALYSIS VARQ42 VARQ43 VARQ44
VARQ45
/PRINT INITIAL KMO EXTRACTION
ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1)
ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
```

/ROTATION VARIMAX  
/METHOD=CORRELATION.

## Factor Analysis

### KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,718
Bartlett's Test of Sphericity	Approx. Chi-Square	183,625
	df	6
	Sig.	,000

### Communalities

	Initial	Extraction
VARQ42	1,000	,602
VARQ43	1,000	,731
VARQ44	1,000	,925
VARQ45	1,000	,753

Extraction Method: Principal Component Analysis.

### Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,011	75,269	75,269	3,011	75,269	75,269
2	,523	13,084	88,352			
3	,369	9,226	97,578			
4	,097	2,422	100,000			

Extraction Method: Principal Component Analysis.

### Component Matrix<sup>a</sup>

	Component
	1
VARQ42	,776
VARQ43	,855
VARQ44	,962
VARQ45	,868

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

### Rotated Component Matrix<sup>a</sup>

--

a. Only one component was extracted. The solution cannot be rotated.

### RELIABILITY

```

/VARIABLES=VARQ42 VARQ43 VARQ44
VARQ45
/SCALE('ALL VARIABLES') ALL
/MODEL=ALPHA.

```



## Reliability

**Scale: ALL VARIABLES**

		N	%
Cases	Valid	67	97,1
	Excluded <sup>a</sup>	2	2,9
	Total	69	100,0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	N of Items
,888	4

FACTOR

```

/VARIABLES VARQ46 VARQ47 VARQ48 VARQ49 VARQ50
/MISSING LISTWISE
/ANALYSIS VARQ46 VARQ47 VARQ48 VARQ49 VARQ50
/PRINT INITIAL KMO EXTRACTION ROTATION
/FORMAT BLANK(.32)
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
  
```

## Theme 7 – Limitations

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,858
Bartlett's Test of Sphericity	Approx. Chi-Square	123,807
	df	10
	Sig.	,000

	Initial	Extraction
VARQ46	1,000	,706
VARQ47	1,000	,825
VARQ48	1,000	,732
VARQ49	1,000	,801
VARQ50	1,000	,585

Extraction Method: Principal Component Analysis.

**Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,650	72,990	72,990	3,650	72,990	72,990
2	,535	10,706	83,697			
3	,398	7,952	91,649			
4	,225	4,508	96,158			
5	,192	3,842	100,000			

Extraction Method: Principal Component Analysis.

**Component Matrix<sup>a</sup>**

	Component
	1
VARQ46	,840
VARQ47	,909
VARQ48	,856
VARQ49	,895
VARQ50	,765

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

**Rotated Component Matrix<sup>a</sup>**

--

a. Only one component was extracted. The solution cannot be rotated.

```
RELIABILITY
/VARIABLES=VARQ46 VARQ47 VARQ48
VARQ49 VARQ50
/SCALE ('ALL VARIABLES')
```

) ALL  
/MODEL=ALPHA.

## Reliability

### Scale: ALL VARIABLES

#### Case Processing Summary

			%
Cases	Valid	40	58,0
	Excluded <sup>a</sup>	29	42,0
	Total	69	100,0

- a. Listwise deletion based on all variables in the procedure.

#### Reliability Statistics

Cronbach's Alpha	N of Items
,907	5