March 2016

The Impact of Customer Contact Personnel on Innovation in Service Firms

Alexandra L. Galli-Debicella
University of Massachusetts - Amherst

THE IMPACT OF CUSTOMER CONTACT PERSONNEL ON INNOVATION IN SERVICE FIRMS

A Dissertation Presented

by

ALEXANDRA L. GALLI-DEBICELLA

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

February 2016

Isenberg School of Management

THE IMPACT OF CUSTOMER CONTACT PERSONNEL ON INNOVATION IN SERVICE FIRMS

A Dissertation Presented

by

ALEXANDRA L. GALLI-DEBICELLA

Approved as to style and content by:

_____
Bruce Skaggs, Chair

_____
Lisa Keller, Member

_____
Ron Karren, Member

_____
Larry Zacharias, Member

_____
George Milne, Director
Isenberg School of Management PhD Program

ACKNOWLEDGEMENTS

First and foremost, my deepest gratitude goes to my chair and advisor, Bruce Skaggs. His support was invaluable during my (many, yes many) years in the doctoral program and his belief in me helped me move forward. I can honestly say I would not be here doing what I'm doing if it wasn't for him. I am forever grateful for his patience, generosity, help, and guidance. Thank you Bruce, sincerely.

It is a pleasure to work with the members of my committee, Lisa Keller, Ron Karren, and Larry Zacharias. I would like to thank them for being generous with their time and advice. Not only are they wonderful people, but I am extremely fortunate to have them as my mentors.

I would also like to extend thanks to all the professors I had the honor of learning from throughout my education. I would especially like to recognize the invaluable support of Tony Butterfield. His kindness is most appreciated.

I am forever grateful for the camaraderie I found in my fellow students. I would like to thank the past and present doctoral students from room SOM 231. Moreover, I am truly honored to say these are my friends: Anthony Asare, Jess Dixon, Grace Guo, Ben Luippold, Jeff Mott, Kim Sherman, Elizabeth Siler, Jose Alves, Jeff Kappen, Banu Ozkazanc-Pan, David Cohen, Sudhir Nair, and Chris Meyer.

Specifically, thank you to fellow student Tracey Riley for her support. She is not only an amazing sounding board, but my favorite lunch date. (You get me, you really get me.) Thank you Sinead Ruane! Her humor and view on life kept things in perspective for me. (It’s okay to be late.) Another thanks to Emily Benson Porschitz, who along with Sinead, took me in as part of their cohort. I appreciate it!

Thanks also to my immediate family, my Mama and brother. Although they really have no clue what I am doing (and don't know how to explain it to friends and extended family), I always knew they were proud of me. Thank you to my Papa, who left too soon, but is always with me. Thank you to my husband, Dan, for his constant belief in me. He stood by me on this incredible journey. I truly appreciate all the support, really I do. Finally, thank you to my son Danny and two fur-babies, C.J. and Caesar. I love them all.

ABSTRACT

THE IMPACT OF CUSTOMER CONTACT PERSONNEL
ON INNOVATION IN SERVICE FIRMS

FEBRUARY 2016

ALEXANDRA L. GALLI DEBICELLA, B.S., QUINNIPIAC UNIVERSITY

M.B.A., QUINNIPIAC UNIVERSITY

PH.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Bruce C. Skaggs

This study examines how information from customer interactions affects innovation of service organizations. Previous research on innovation has centered on the importance of the acquisition and utilization of knowledge within the innovation process. Organizations who are better able to acquire and utilize knowledge gain advantages in delivering and developing innovation. While the acquisition and utilization of knowledge in general is important to the innovation process, the literature views necessary one particular type of knowledge: knowledge of the customer.

Given the importance of customer knowledge, much of the literature focuses on mechanisms organizations employ to engage customers to gather this type of information. While interacting with customers to gain information is important to innovation in all firms, that interaction has particular implications for service organizations which rely on the dual role of customer contact personnel (CCPs). During service production, CCPs gather information from customers (preferences, needs and desires), and use it in the production of the offering. CCPs occupy a unique position in service organizations, as they sit at the nexus of information gathering and information utilization.

Considering the position that CCPs occupy in service organizations, it is surprising that little attention has been directed at examining the role of CCPs in service innovation. Therefore, this paper examines whether increasing levels of customer interaction with CCP will lead to more innovation in service firms. Moreover it will determine how knowledge structures matched with level of CCP-customer interaction can lead to different types of innovation in service firms. Lastly, it will investigate how levels of autonomy (of CCP) with certain types of innovation will influence performance.

KEYWORDS: customer contact; knowledge flows; innovation; service firms; organizational performance

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

Figure Page

CHAPTER 1

INTRODUCTION

Much of the research on innovation has focused on the importance of the acquisition and utilization of knowledge in the innovation process. Indeed, the literature strongly supports the idea that firms that better acquire and utilize knowledge gain advantages in developing and delivering innovation. For example, researchers found that firms that foster knowledge transfer were able to encourage innovation (Brachos, Kostopoulos, Soderquist, & Prastacos, 2007). Another study found that firms searching for and transferring interdivisional knowledge across divisions within a diversified firm were able to increase the innovation's impact (Miller, Fern, & Cardinal, 2007). Sáenz, Aramburu, and Rivera (2009) looked at various knowledge-sharing mechanisms and found that knowledge sharing enhanced the firm's innovative capability. In addition, Mu, Love, and Peng (2008) found that firms that improved their capability to acquire knowledge were able to enhance firm innovation. While the aforementioned studies appear somewhat dissimilar, they all relate to the notion that firms that can acquire and utilize knowledge can create advantages in the innovation process.

While the acquisition and utilization of knowledge in general is seen as important to the innovation process, the literature views one particular type of knowledge as paramount: knowledge from the customer. Research has shown that knowledge from customers provides firms with unique and valuable insights concerning market needs (Flint, Larsson, Gammelgaard, & Mentzer, 2005; Mills & Morris, 1986; von Hippel, 1986, 1989; Zander & Zander, 2005) and can be used to generate commercially-viable

new product ideas (Lilien et al., 2002; von Hippel, 1986). The literature has also found that firms that utilize the knowledge gained from their target customers can "create continuously superior customer value" (Stanley & Narver, 1995: 63). This in part because the insights firms gain from their customers lead to the development of competitive advantages through creating new processes, product ideas, and gaining a deeper understanding of customers' needs to offer tailored solutions (Hunt & Morgan, 1995; Narver & Slater, 1990).

Given the importance of customer knowledge, much of the literature has focused on mechanisms firms can use to engage customers in order to gather this type of information. Within traditional views of market research methods, firms gather information on the customers' *needs* from customers at the center of the target market (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002). Insights are typically gained through specific interactions with customers in the form of surveys, interviews, focus groups or lead users (Leonard & Rayport, 1997; Griffin & Hauser, 1993; von Hippel, 1986; Wah, 1999). Product firms like Procter & Gamble utilize these methods to determine customer preferences when designing products and services. With lead users, von Hippel found that certain customers (who are ahead of market trends and needs beyond the average consumer) are important partners during product development (von Hippel, 1986). This method is particularly useful for firms like 3M Corporation, seeking to offer truly innovative product and services in fast-paced, highly competitive industries (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002). In these cases, the firm is actively seeking interactions with customers in order to gain information that can be used in the creation of novel products.

While interacting with customers in order to gain information is important to innovation in all firms, that interaction has particular ramifications for innovation in service organizations which are highlighted by the dual role of customer contact personnel (CCPs). In most service organizations, an interaction takes place between the customer and the firm during service production. The actual service offering is typically co-produced by the customer and the CCPs of the firm (Bateson, 2002; Hartline & Ferrell, 1996; Lusch & Vargo, 2006). During service production, CCPs gather information from customers in the form of preferences, needs and desires. The CCPs then use this information to manage the customer's expectations and experience, as well as to produce the offering (Berry, 1980; Shostack, 1977). Thus, CCPs occupy a unique position in service organizations, sitting at the nexus of information gathering and information utilization. This unique position has significant implications for innovation, for not only are CCPs collecting large amount of customer information on a daily basis, but as producers of the service they are also responsible for implementing any new innovation the firm creates. This implies that firms better at collecting and disseminating the knowledge from its CCPs may enjoy innovation advantages.

Given the position that CCPs occupy in service organizations, it is surprising that no study exists that examines the role of CCPs in service innovation. The present study is an attempt to address this deficiency. Given that the acquisition and utilization of customer knowledge is an important driver of innovation, and that CCPs sit at the nexus of the acquisition and utilization of customer knowledge in service organizations, the present study proposes to explore the question as to the role that CCPs play in the innovation process in service organizations. Specifically, I will address: (1) how the

dissemination of knowledge from CCPs impact the type and amount of firm-level innovation and (2) whether the impact that CCPs have on innovation implementation has performance implications for service organizations.

In what follows I begin by discussing the importance of knowledge in innovation. Next I discuss the role of CCPs in service organizations, highlighting the unique position they occupy. From there, I offer a set of hypotheses that tests how customer information generated by the interaction with CCPs influences the degree of innovation, as well as how different methods for sharing this information impacts the types of innovation these firms pursue. I then offer an additional set of hypotheses that examines the impact CCPs have on the successful implementation of innovations. I end the dissertation with a discussion of the findings from the research and identify a number of areas for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Innovation and Knowledge

Innovation is simply defined as an "idea, practice, or material artifact" that is "perceived to be new by the relevant unit of adoption" (Dewar & Dutton, 1986: 1422; Zaltman, Duncan, & Holbek, 1973). One important area that scholars and practitioners have focused on is the process of innovation. Innovation is a knowledge process intended to create new knowledge, which is geared towards the development of commercial and viable solutions (Du Plessis, 2007; Herkema, 2003). Additionally, innovation is a process where "knowledge is acquired, shared and assimilated with the aim to create new knowledge" (Herkema, 2003: 341; Du Plessis, 2007). New services and products thus become the embodiment of knowledge (Herkema, 2003).

Since acquiring and utilizing knowledge is essential to the innovation process, it is also imperative to look at the knowledge itself. The academic literature has suggested one specific type of knowledge to be of great importance—knowledge from the customer. Customer knowledge can be defined "as a kind of knowledge in the area of customer relationship" (Zanjani, Rouzbehani, & Dabbagh, 2008: 61). In simple terms, it's knowledge of the customer. Understanding what customers know (including customers' needs, customers' experiences with the firm, customers' relationships with the firm, and the like) is a critical part of an organization's knowledge (Rowley, 2002). Customer knowledge can be formed by informational interactions between customers and various entities (including the organization, competitors, and other customers) (Zanjani,

Rouzbehani, & Dabbagh, 2008). There are many types of customer knowledge that organizations try to acquire and utilize, including: knowledge that the customer gains in order to better understand the firm, knowledge residing in customers that can help firms enhance their products or services, and knowledge that can help firms understand its target customer better (Gibbert, Leibold, & Probst, 2002; Zanjani, Rouzbehani, & Dabbagh, 2008).

Previous literature has examined how customers are an important source of knowledge for organizations (Gordon, Kaminski, Calantone, & di Benedetto, 1993; Mills & Morris, 1986; von Hippel, 1986). The knowledge residing in customers (e.g. what they know) is a valuable resource (Gibbert, Leibold, & Probst, 2002; Magnusson, 2003) that provides a strategic opportunity for companies to learn (Zack, 2003). Research has shown that customers can provide valuable knowledge, including constructive insights on market needs (Flint, Larsson, Gammelgaard, & Mentzer, 2005; Gordon, Kaminski, Calantone, & Benedetto, 1993; Mills & Morris, 1986; von Hippel, 1986, 1989; Zander & Zander, 2005). Moreover, the knowledge from customers can assist organizations with the development of novel products, process ideas, and services (Lilien et al., 2002; Magnusson, 2003; von Hippel, 1986) as well as to create commercially important innovations (von Hippel, 1986).

Considering how important customer knowledge is, the literature has paid close attention to the process organizations use to engage customers for the purpose of acquiring knowledge for innovation. Organizations traditionally employ common methods, like customer surveys, interviews, focus groups or lead users to gather information from customers (Leonard & Rayport, 1997; Griffin & Hauser, 1993; von

Hippel, 1986; Wah, 1999). By using studies based on interviewing, focus groups, and surveys with customers, organizations gain information on customers at the center of the target market at specific instances (usually either the past or present). These methods are particularly useful at understanding the needs and preferences from customers (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002). Organizations also employ "lead users" (those customers that are well ahead of market trends and face needs that are beyond the average consumer) to better understand their customers' knowledge. In these cases, firms seek out lead users' involvement during the production process. Research has found that by using lead users, firms tend to gain greater understanding of the market's future needs and the ways to meet those specific needs (von Hippel, 1986, 1988, 1989). Moreover, by having clients as part of the production process, it also increases the probability for new products to succeed (Alam, 2002; Gruner & Homburg, 2000; Melton & Hartline, 2010; von Hippel, 1988). Through these traditional methods, organizations actively seek interactions with customers to find out what their needs are as well as ascertain their thoughts about the organizations' products and services. From these insights, customers provide responses that can create changes (Gibbert, Leibold, & Probst, 2002).

Even though previous research has examined various processes of knowledge acquisition and utilization for innovation, it has ignored a vital aspect of that process in service firms: the role of customer contact personnel. The fundamental trait of service firms is that an interaction occurs between the customer and the service firm during the service production process in order for the service to be delivered (Mills, Hall, Leidecker, & Margulies, 1983; Mills & Posner, 1982; Soterioua & Chase, 1998). Many service firms inherently move beyond the traditional product firm issue of an arms-length relationship

because of this indivisible relationship between the service firm and its customer in the delivery of a service. Due to the intangible nature of services, service firms require their customer contact personnel to interact to a greater degree with clients than their manufacturing counterparts (Mills, 1986; Mills, Hall, Leidecker, & Margulies, 1983; Mills & Posner, 1982). Considering the inherently indivisible relationship between CCP and their customers in the delivery of a service, service organizations have an opportunity to acquire continuous and richer knowledge from their customers. Therefore, the role of CCP in service organizations has significant implications for innovation in service organizations.

2.2 Customer Contact Personnel

There are several differences that exist between service and manufacturing firms during the production process (Mills, Hall, Leidecker, & Margulies, 1983) with particular regard to the relationship between clients and employees of service firms (Jones, 1990; Mills, 1986; Mills & Moberg, 1982; Mills & Morris, 1986; Mills, Hall, Leidecker, & Margulies, 1983). First, the output of the service firm is inherently intangible since a service is utilized immediately by the customer (Huffman & Skaggs, 2010; Junarsin, 2010). Therefore, the customer is not purchasing a physical product but the production process itself (Skaggs & Huffman, 2003). Second, there is an indivisible relationship between the employee/producer and consumer of the service for the desired service to be produced. The delivery and consumption of the service is occurring simultaneously by both the employee/producer and consumer (Bateson, 2002; Mills & Moberg, 1982). Third, service firms depend on their employees to process information externally which

typically comes from exchanges with customers (Bateson, 2002; Mills, Hall, Leidecker, & Margulies, 1983). The interaction between customers and service firms is heightened relative to other types of firms considering the contiguous relationship that exists between the customers and providers of the service.

Since customers are interacting during the service production process, an exchange of information is taking place. As customers interact and share information with organizations, they generally do so with the firm's front-line employees— the customer contact personnel (CCP) (Hartline & Ferrell, 1996; Singh, 2000; Xu, Jayaram & Xu, 2006). The role of the CCP is an essential element in the efficiency of the service delivery system (Chase, 1978) and success of the service delivery process (Berry, 2000; Bitner, 1992; Nguyen, 2010), as they simultaneously produce and deliver the service (Saser, 1976). They are the primary personnel at the point of service production and most work jointly with customers (Babbar & Koufteros, 2008; Thompson, 1989). Moreover, CCP are expected to actively gather information during their interactions with customers, and then utilize that information to perform the service (Thompson, 1989). Therefore, a close and indispensable personal interface could exist between some customers and CCP (Fuchs, 1968).

The literature has also shown how customer contact personnel are an important factor when it comes to organizational effectiveness (Chase, 1978; Singh, 2000). CCP represent the external organization and can influence the internal organization through their communications (Bettencourt & Brown, 2003; Pappas & Flaherty, 2007). The contact between the service firms' employees and its customers often drives the design of new services (Bearden, Malhotra & Uscátegui, 1998; Bettencourt & Brown, 2003; Cook

Goh & Chung, 1999; Froehle, 2006; Melton & Hartline, 2010; Pappas & Flaherty, 2007). For example, novel ideas can be created when service providers identify relationships or associations that others may not have seen (Othman, 2011). In addition, the literature has also looked at how including front line employees in the design of new services can create positive outcomes, like increasing sales performance and efficiencies in project development (Alam, 2002; Melton & Hartline, 2010). Moreover, CCP's involvement with new service development is crucial since they actually deliver the service (Gebauer, Krempl, Fleisch, & Friedli, 2008). CCP involvement with new service testing or personnel training even reduces the threat of service delivery process failure since they become familiar with the content of the new service prior to launch (Melton & Hartline, 2010; Scheuing & Johnson, 1989).

CCP are also a significant factor in the customers' satisfaction with the service rendered, since the customers' notion of successful service delivery relies to a large degree on the success of their communication with the CCP (Emery & Barker, 2007; Guenzi & Pelloni, 2004; Huang, 2008; Reynolds & Beatty, 1999; Thompson, 1989). The performance of CCP also helps attract target customer groups and define corporate reputation (Nguyen, 2010).). Research has even shown that a key determinant of customer satisfaction in the service industry is the attitude of customer contact personnel (Hartline & Ferrell, 1996; Heskett, Sasser & Hart, 1990; Parasuraman, Zeithaml & Berry, 1985, 1991; Sasser, 1976). In sum, CCP are important in shaping the customers' expectations, managing customers' experience, and shaping customers' perception and evaluation of the service received (Berry, 1980; Huang, 2008; Lovelock, 1981; Sasser, 1976; Shostack, 1977).

CHAPTER 3

THEORY AND HYPOTHESIS

3.1 CCP and Customer Contact

Service organizations rely on incorporating important information from their environment, specifically from their customers. This is then followed by a transformation procedure where information is changed to fit the requirements of the client as well as the organization's service capability. Since there is a need for information during the service, there is an association between the firm and the customer during the interaction (Mills, Hall, Leidecker, & Margulies, 1983; Singh, 2000). The degree to which CCP interact with customers can vary depending on the level of service allowed by both the firm and the customer (Bateson, 2002). Therefore, the participation of customers during the service process can vary in degree (Bateson, 2002; Mills, 1986). Some customers may have a more active role during the production of services (e.g. consultation with a doctor), while others may have more limited roles (e.g. cashing a check at a bank).

Customer contact is the degree of closeness between the customer and CCP during the interaction (Junarsin, 2010). This includes the level of interpersonal service between the customer and provider of the service. For example, customer contact in an upscale restaurant is very intensive while customer contact in a supermarket with self checkout is relatively low (Junarsin, 2010). It also involves the ability of customers to be involved personally and actively affect the nature of service being delivered through the interactions with CCP (Fitzsimmons & Fitzsimmons, 1998; Junarsin, 2010). Therefore, services can be thought to exist on a continuum between high customer contact service types and low customer contact service types (Bateson, 2002; Chase, 1978; Chase,

Northcraft & Wolf, 1984; Xu, Jayaram & Xu, 2006). As the firm recognizes and understands which level of service it wants to deliver, the firm selects the degree of contact its CCP have with customers during the service (Junarsin, 2010). Little interaction between the customer and CCP is usually present when the firm's service is more standardized in nature and less information needs to be exchanged (Xu, Jayaram & Xu, 2006). CCP are more distant from the customer during the service, as more traditional manufacturing approaches (e.g. product-line) are used by the firm (Bateson, 2002). For instance, the level of contact is relatively low between customers and a firm's customer service department during a phone call whereby customers are asked to press a series of numbers to address their issue (as opposed to speaking to an operator). As a result, less knowledge is exchanged between the firm's CCP and the client. High customer contact happens when the production and delivery of the firm's service are absolutely inseparable (Bateson, 2002). Higher interaction between the customer and the firm's CCP generally occurs when the service requires greater flexibility with more information needing to be shared (Xu, Jayaram & Xu, 2006). It occurs when customers need to supplement the information needed for CCP to provide the desired service (Bateson, 2002; Chase, 1978; Chase, Northcraft & Wolf, 1984. For instance, the level of contact is relatively high between patients and their primary physicians during a medical exam (as the patient must share their individual history and personal ailments with the doctor at the time of service). As a result, greater knowledge is exchanged between the firm's CCP and the client.

The level of customer interaction can differ among service firms as customers who consume services may have varying preferences for the level of contact (Bateson,

2002; Junarsin, 2010). Some customers may desire more "hand holding" while others prefer minimal contact with CCP (Xu, Jayaram & Xu, 2006). This has implications for the overall level of customer contact provided by each service firm. As a result of the interactions between each firm's CCP and their customers, the degree of knowledge shared between the customer and CCP can vary from firm to firm. For example, when sending money overseas, one bank may ask its customers to write and arrange the documents and then submit them directly to the cashier. Meanwhile, another bank may prefer to utilize their informed associates at the customer service desk to write and prepare the documents (Junarsin, 2010). Another example is travel services where some travel agencies may offer self-service booking through the Internet only, while other travel agencies may have offices with individual agents who provide the travel-related services. Both complete travel transactions for their clients (e.g. book flights and hotels, make travel arrangements), but the latter experiences a greater level of customer interaction (van Riel, Semeijn & Pauwels, 2004). These different interactions that firms have can lead to unique insights on service design and delivery, where different firms will differ across the varying degree of customer contact (Bearden, Malhotra & Uscátegui, 1998; Soteriou & Chase, 1998; Kellogg, 2000; Xu, Jayaram & Xu, 2006).

The degree of contact between the firm's CCP and customer can have profound implications on both quality and productivity performance (Xu, Jayaram & Xu, 2006; Junarsin, 2010). For example, research has shown how quality and productivity improvements can be traced to the level of customer contact (Harvey, 1998; Mefford, 1991; Xu, Jayaram & Xu, 2006). As the degree of interactions between customers and CCP increases, the more complex are the outcomes desired by clients (Harvey, 1998).

This requires more information to be gathered and processed by the CCP in order to provide the service. Greater interactions (between the CCP and their customers) also allow the CCP to gain a better understanding of the customer requirements, which can therefore increase the quality of the service (Mefford, 1991). Greater customer contact also provides CCP greater opportunities to sell additional services to clients (Bateson, 2002). Through increased levels of dynamic interactions between customers and CCP, additional valuable insights are provided for productivity improvements and innovations, like streamlining the service delivery process (Mefford, 1991; Xu, Jayaram & Xu, 2006).

CCP sit at the nexus of information gathering and utilization. While service production is in process, the CCP acquire information and a deeper understanding of the customer (Aldrich & Herker, 1979; Gebauer, Krempl, Fleisch, & Friedli, 2008; Nguyen, 2010; Moosa & Panurach, 2008). CCP can observe and provide back to their organization important pieces of knowledge from customers (Nguyen, 2010), as well as impressions of customer reactions in cases when customers do not verbally offer feedback (Gebauer, Krempl, Fleisch, & Friedli, 2008). Moreover, customer contact personnel can recognize obvious customer satisfaction (or dissatisfaction) with the organization's service as it is being offered (Gebauer, Krempl, Fleisch, & Friedli, 2008). The CCP utilizes this information during the production of the service to provide a better service.

Utilizing knowledge gained from customers during interactions with CCP in developing new innovations can become a source of competitive advantage for service organizations. Research has shown that firms that obtain knowledge from their target customers "create continuously superior customer value" (Stanley & Narver, 1995: 63). Due to the closeness with customers during the delivery of the service, the organization's

CCP are privileged to the latest ideas and insights (Moosa & Panurach, 2008). The literature discusses how differing levels of interaction between customers and service firms can impart different amounts of information shared (Huffman & Skaggs, 2010). As would be expected, fewer interactions between the customer and CCP generally offer less information being exchanged. Conversely, greater interactions can provide more information being shared (Xu, Jayaram & Xu, 2006).

As firms continuously learn more from their target customers, they are better positioned to gauge what their clients' current and future needs are in order to develop and market new services and processes that offer value while meeting those needs (Gordon, Kaminski, Calantone, & Benedetto, 1993). Since CCP can gain knowledge from customers relating to innovations, and the level of interaction can dictate how much knowledge is shared, then there can also be implications for the overall levels of innovation experienced by the service firm. Therefore, it is suggested that greater interactions between CCP and customers (which fosters the opportunity for organizations to obtain greater novel information), will lead to an increase in innovation for organizations.

> *Hypothesis 1*: *There will be a positive relationship between the level of customer contact that customers have with CCP and the level of firm innovation.*

3.2 CCP, Structure, and Knowledge Dissemination

Customer contact personnel play an important role in service organizations as they acquire customer information, produce the service, and implement any new innovations that firm establishes. The knowledge gained from customers has an economic value as long as the knowledge is used effectively by the organizations (Zack, 2003). Therefore, the knowledge has to be fully integrated into the organization (including back-end processes) in order for managers and employees to act promptly and flexibly (Gebert, Geib, Kolbe, & Brenner, 2003). However, turning insights gained from customer interactions into innovation will entail firms taking the knowledge gained from customer contact personnel, disseminating it to the right people in the organization, and integrating it into new offerings.

There has been considerable discussion in the academic literature about how organizational knowledge disseminates and flows throughout the firm (Schulz, 2001, 2003). Organizational knowledge commonly refers to knowledge held by an organization that either all or a part of the organization share (Huber, 1991). Knowledge flows can be viewed as a transfer of skills and technology between the subunits of an organization (Ordonez de Pablos, 2004; Gupta & Govindarajan, 1994), the transfer of business practices (Darr, Argote & Epple 1995, Szulanski 1996), a transference of competencies (Shiah-Hou & Chen, 2007), information from the external market (e.g. customers) (Gupta & Govindarajan, 1991; Ordonez de Pablos, 2004), and/or the transfer of know-how and information between subunits (Schulz, 2001). Knowledge becomes an important organizational asset if it is accessible. The value of knowledge increases by means of the

level of transferability and accessibility within the organization (Ordonez de Pablos, 2004).

Knowledge management is the attempt by organizations to get relevant knowledge to the right people at the right moment. It helps employees improve organizational performance through the sharing of knowledge, skills, and abilities (Ordonez de Pablos, 2004). To be successful in managing knowledge, it is important to transfer created knowledge to other parts of an organization before completely exploiting it (Birasnav & Rangnekar, 2010; Nonaka, 1994; Nonaka & Takeuchi, 1995). This involves acquiring or creating knowledge and institutionalizing knowledge in structures that not only allow employees to access those resources, but be a part of its continuous generation (Ordonez de Pablos, 2004). The structure of an organization should facilitate the detection, transfer, and utilization of intra-organizational knowledge (Serenko, Bontis & Hardie, 2007).

There are two kinds of knowledge flow structures, horizontal and vertical, that are greatly discussed in the literature (Aoki, 1986; Monteiro, Arvidsson, & Birkinshaw, 2008; Ordonez de Pablos, 2004; Schulz, 2001, 2003; Serenko, Bontis & Hardie, 2007; Shiah-Hou & Chen, 2007; Snider & Nissen, 2003; Wagner, 2003). Knowledge structures with vertical flows tend to represent unidirectional paths, whereby knowledge is transferred through the typical chain of command structure. Vertical flows of knowledge are used for decisions that are in line with the organizational point of view (Aoki, 1986; Schulz, 2001, 2003; Monteiro et al., 2008). Knowledge structures with horizontal flows tend to incorporate multidirectional paths, whereby knowledge is directly shared among groups of peers. Accordingly, the horizontal flows of knowledge are used for decisions affecting the immediate users' group of peers, which may or may not incorporate the

needs of other groups within the organization (Aoki, 1986; Monteiro et al., 2008; Schulz, 2001, 2003; Shiah-Hou & Chen, 2007).

The vertical and horizontal knowledge structures tend to supplement each other when it comes to knowledge transfer and help with knowledge creation. These two forms are popular in the literature since the transfer of knowledge in organizations can be achieved through horizontal (e.g. from peer to peer) and/or vertical (e.g. front-line employee to senior management, senior management to front-line employee) paths (Aoki, 1986; Gupta & Govindarajan, 2000; Schulz, 2001, 2003; Shiah-Hou & Chen, 2007). This in part is because organizations are already designed to incorporate horizontal and vertical divisions when it comes to work, activities, and responsibilities in order to enable the organization's processes (Serenko, Bontis & Hardie, 2007; Thomas & Allen, 2006). The horizontal and vertical divisions are a fundamental framework that enables desired organizational processes and systems (Thomas & Allen, 2006) as well as facilitates the detection, transfer and use of intra-organizational knowledge (Serenko, Bontis & Hardie, 2007). For example, a study found that new knowledge collected is generally shared through vertical flows, and routine knowledge collected is generally shared through horizontal flows (Schulz, 2001). The uncertain relevance of novel knowledge will pull it vertically through an organization, where its exposure is the greatest. Vertical structures also provide quicker exposure of novel knowledge, which produce a faster and comprehensive assessment of its relevance. With routine and incremental knowledge, it travels in more horizontal directions, where it is more relevant for its adaption, exploitation, and implementation (Schulz, 2001).

Both vertical and horizontal flow structures can be beneficial for firms since they "facilitate organization-wide leveraging of knowledge" (Schulz, 2001: 662). For example, a subsidiary will freely transfer knowledge that is considered helpful to other subsidiaries because of expected reciprocation from the receiving subsidiaries (Schulz, 2001, 2003). Knowledge is a valuable resource for the organization only if it is accessible (Ordonez de Pablos, 2004). By gathering and integrating existent knowledge available throughout the firm, the organization can save significant costs associated with researching that needed knowledge (Shiah-Hou & Chen, 2007). Moreover, organizations that continuously encourage information flow from employees to top management ensure employees participation in processes like decision-making and improve commitment to the job, as well as organization. This in turn increases employees' perceptions that top management encourages the proposal of innovative ideas (Birasnav & Rangnekar, 2010).

For horizontal and vertical structures, the flow of knowledge is the overall amount of know-how and information transmitted (Schulz, 2003). Knowledge flows provide greater precision about the directionality of the knowledge being transferred (Mom, van den Bosch & Volberda, 2007), as it occurs along a channel between a source and a target (Gupta & Govindarajan, 2000; Shiah-Hou & Chen, 2007). Horizontal flows pass knowledge from one subunit to peer subunits under the same supervising unit. Moreover, horizontal flows help combine, collaborate, and develop the knowledge from the subunit and its peers (Schulz, 2001, 2003; Shiah-Hou & Chen, 2007; Tasi, 2001). Vertical flows, on the other hand, move knowledge from a subunit to its supervising unit. Vertical flows combine knowledge not only from the sub-unit, but also the knowledge from the supervising unit level. As a result, vertical flows include a greater number of sources of

knowledge. Moreover, the sources of knowledge operate at various locations within the firm (non-adjacent units) (Schulz, 2001, 2003).

Ultimately, understanding knowledge flows is strategically important for organizations. First, knowledge flows transmit local know-how, which is generally created in one unit to other locations within the organization. Second, knowledge flows allow for the coordination of work flows that link several, and dispersed units. Third, knowledge flows allow several units to collaborate in order to capitalize on opportunities. This includes unified responses in regards to competitors, customers, and suppliers. Lastly, knowledge flows help recognize and exploit economies of scale and scope (Schulz & Lloyd, 2001). By understanding how to manage knowledge through control and coordination of organizational flows of knowledge, organizations can gain a competitive advantage (Schulz & Lloyd, 2001).

As customer contact personnel interact with customers, there are many opportunities to gain knowledge from customers. However, in order to have a specific impact on innovation the knowledge gained from the CCP must make its way throughout the organization's horizontal and vertical knowledge flow structures. In what follows, I hypothesize that the type of flows used will have implications for types of innovation.

3.3 Knowledge Flows and Innovation

Firms utilizing horizontal and vertical knowledge structures allow for knowledge to be shared throughout the organization (Schulz, 2001). The literature has extensively shown a positive relationship between knowledge from customers and innovation, where

customer knowledge can drive innovation. Greater access to customer knowledge increases the opportunity for organizations to develop innovations (Hunt & Morgan, 1995; Lilien et al., 2002; Narver & Slater, 1990; von Hippel, 1986). However, the question of whether the structure of knowledge flows has significant impact on the type and degree of innovation that a service firm develops has not fully been explored.

The literature extensively details various typologies of innovation. For example, academics have looked at the impact of innovations on a continuum from radical (revolutionary changes) to incremental (small adjustments) (Dewar & Dutton, 1986; Hage, 1980). Moreover, research has looked at innovation in terms of scale being either component (relates to a subroutine or discrete aspect of an organization's operations) or architectural (relates to organization-wide routines) (Amit & Schoemaker, 1993; Henderson & Cockburn, 1994; Leonard & Rayport, 1997; Matusik & Hill, 1998). Moreover, some academics categorize innovation based on the innovation's impact on components and its impact on the linkages between components as well as create distinct categories (incremental, radical, modular, and architectural) (Henderson & Clark, 1990). While numerous categories of innovation exist, many have limited applicability to service firms due to the intangibility and interactivity (between the provider and receiver of the service) of services (Alam, 2006; Gago & Rubalcaba, 2007; Gallouj, 2002; Hipp, Thether & Miles, 2000; Mansury & Love, 2008). As a result, it can become difficult to discern the novelties built into service offerings. For example, the traditional distinction between "product" and "process" innovation is less useful when it comes to service organizations (Gallouj, 2002; Mansury & Love, 2008). Product innovations involve a tangible product as the final outcome. However, services have no tangible products produced at the end.

Therefore there can be no "product innovation" for most services. Moreover, classifications like incremental and radical innovations can be limited when involving service firms (Vang & Zellner, 2005), as it may be too difficult to differentiate between the two (McNulty & Ferlie, 2004; Subramanian & Youndt, 2005). Since services involve a simultaneous production and consumption of services between customers and CCP, it makes it much more difficult to observe. Even though customers and producers of the service understand what the final outcome of the service should be, they may still have a difficult time discerning the difference between radical and incremental service innovations.

The literature has highlighted the distinctive nature of service innovation by discussing categorizations of innovation that are better suited for service firms (Avlontis, Papastathopoulou, & Gounaris, 2001; Debackere, Van Loo, & Papastathopoulou, 1998; Gadrey, Gallouj & Weinstein, 1995; Hipp, Thether & Miles, 2000; Lovelock, 1984). Research has found that a deviation from core competencies or improvements in current offerings can lead to two forms of innovation for service firms: service (new or improving the service offering itself) and delivery (changes to the delivery of the service, but not the service itself) innovations (Huffman & Skaggs, 2010; Skaggs, 2008). In another study involving a cross-national comparative analysis on service innovation, Alam (2006) looked at the various factors involved with new service strategy (new services developed by the firm) and new service development process (the activities from idea generation up to its launch). Parasuraman discusses service innovations as any changes to an existing service in two terms as well—the service delivery process and any

new service(s) being considered to supplement an organization's current offerings (2010).

Given the above discussion, I assume that service firms will experience innovations in the form of new services and/or new service delivery processes (Alam, 2006; Huffman & Skaggs, 2010; Skaggs, 2008; Parasuraman, 2010). Service innovations involve new solutions, concepts, or value propositions that lead to additional new services. Meanwhile, delivery process innovations are new ways of designing and producing services (Hipp, Thether & Miles, 2000; Huffman & Skaggs, 2010; Skaggs, 2008; Parasuraman, 2010). This involves the new ways in which front-line service employees perform their job while delivering the service (den Hertog, 2002; Johne & Storey, 1998). Thus, service innovations and service delivery innovations are the appropriate types of innovation to align with knowledge flow structures in service firms.

This paper proposes that the different types of innovation depend on not only the customer contact personnel sharing the knowledge (gained from interactions with customers) with the rest of the organization, but how that knowledge travels through the organization's horizontal and vertical knowledge flow structures. Since different knowledge structures can disseminate the same knowledge to different parts of the organization, I suggest that it can also lead organizations to pursue different types of innovation. Figure 1 illustrates the conceptual model that will explain these relationships.

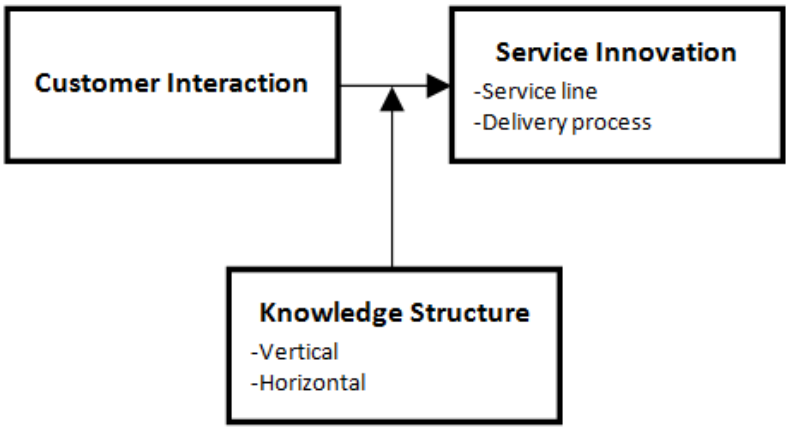


Figure 1: A Model Illustrating the Relationships among Customer Interaction, Service Innovation, and Knowledge Structure.

The literature has already examined how customers provide important information that can lead to the development of novel process ideas and services (Lilien et al., 2002; von Hippel, 1986). Moreover, the contact between employees and their customers can drive the design of new services for organizations (Bearden, Malhotra & Uscátegui, 1998; Cook, Goh & Chung, 1999; Froehle, 2006). However, the literature pays little attention to the importance of the CCP's role in learning from their customers what current and future needs are. Customer contact personnel are the ones interacting with clients and are indivisible from the service at the point-of-delivery (Babbar & Koufteros, 2008; Thompson, 1989). Therefore, CCP's involvement with new service development is essential since they actually deliver the service (Gebauer, Krempl, Fleisch, & Friedli, 2008).

As CCP gain greater knowledge (through increased interactions with customers) they can share it with other front-line employees through the firm's horizontal knowledge structure. Horizontal knowledge structures involve subunits on the same hierarchical level (Schulz, 2001; 2003). For service firms, the horizontal knowledge flows from and among CCP, as well as with the managers of CCP. Moreover, the degree of horizontal knowledge structures can vary for each firm. As the degree of horizontal knowledge structures increases, firms are more likely to share information among CCP and their peers. This knowledge allows CCP to better determine how a service should be provided and delivered to customers, which can also lead to a greater opportunity for new delivery process innovations to occur. Moreover, during that contact, employees can recognize obvious customer satisfaction (or dissatisfaction) with the service as it is being offered (Gebauer, Krempl, Fleisch, & Friedli, 2008).

As CCP interact more with customers during the delivery process, they will gain a deeper understanding around the best practices for actually implementing a service. Greater innovation around the delivery process itself will occur as CCP understand the nuances of how to execute a service with customers during their interactions together. The more customer interaction CCP have, the greater the intimate details of how services are delivered will be generated. As more details of service delivery are generated, the greater the amount of delivery process innovation can occur. Customer contact personnel, who gain knowledge about service delivery from their interactions with customers, can share it with their peers through the firm's horizontal knowledge structure. Through this sharing, there is a greater opportunity for more new delivery process innovations to occur for the service organization. Therefore, as the interaction increases between the customer

contact personnel and customers during the service production process, and that knowledge from customers is integrated with increases in the degree of the organization's horizontal knowledge structure, the more likely delivery process innovations will result.

> *Hypothesis 2. As the level of interaction between customers and CCP increases, firms with increasing levels of horizontal knowledge structures (that link customer contact personnel together) will see a corresponding increase in delivery process innovation.*

As mentioned previously, customers are a source of valuable knowledge that enables firms to gain constructive insights on external market needs (Flint, Larsson, Gammelgaard, & Mentzer, 2005; Gordon, Kaminski, Calantone, & Benedetto, 1993; Mills & Morris, 1986; von Hippel, 1986, 1989; Zander & Zander, 2005) and to create novel product and process ideas (Lilien et al., 2002; von Hippel, 1986). Firms that continuously learn about their target customers can better gauge what their clients' current and future needs are in order to develop and market new services and processes that offer value while meeting those needs (Gordon, Kaminski, Calantone, & Benedetto, 1993). It is imperative that knowledge is integrated into the organization in order for managers and employees to act promptly and flexibly (Gebert, Geib, Kolbe, & Brenner, 2003). The interactions between the client and the customer contact personnel can lead to CCP obtaining that knowledge from the customer for their organizations.

Customer contact personnel who continuously engage with clients during the interaction will also gain knowledge about underlying needs of customers that may not be met by current service offerings. CCP not only undercover unmet needs from important

customer groups during their interactions within delivery of existing services, but they also understand the importance of that information to the firm (Pappas & Flaherty, 2007). These employees are in good position within the organization to not only integrate new knowledge (while keeping the customer's perspective in mind), but to also champion new initiatives for their organization to pursue (Pappas & Flaherty, 2007). Therefore, CCP can utilize the information obtained during the production of the service to recognize areas where additional related services for the client are needed.

As CCP gain knowledge about underlying customer needs, they can share it with the service firm's management utilizing the organization's vertical knowledge structure. Management is in a better position to utilize knowledge about underlying customer needs to generate new innovation, because they control the resources needed to build new service lines. With vertical knowledge structures, knowledge flows between all the subunits of a supervising unit, as well as between non-adjacent units in an organization (Schulz, 2001, 2003). For service organizations, vertical knowledge structures involve the top levels of management and the customer contact personnel of a service firm. As a result, vertical outflows incorporate a greater number of sources of knowledge (Schulz, 2001, 2003).

The degree of vertical knowledge structures differs among organizations. As the degree of vertical knowledge structures increases, firms are more likely to have and utilize the knowledge among CCP and top managers. As a result, these disparate pieces of knowledge shared from different parts of the organization come together utilizing the vertical knowledge structure. Broad patterns of insights from the knowledge of customers can then be localized. By having knowledge centralized in an organization, senior

executives (as well as other members of the organization) are more likely to see connections between the insights gained from the broad collection of customers' knowledge, as well as competitive white space that can be extended into new lines of services. This centralized knowledge obtained from different areas of the organization allows top managers to see broader patterns and thus gain ideas of where they should create new services.

Research has also shown that when employees are encouraged to share new ideas or initiatives with others in their organization, projects have a greater chance of being implemented (Floyd & Wooldridge, 1992). When the knowledge from customers is shared from the CCP with other employees through the firm's vertical knowledge structure, there is a greater opportunity for new service line innovations to occur. Moreover, by having greater amounts of knowledge centralized in an organization, top management and other employees are better equipped to distinguish opportunities for the organization to engage in service line innovations. Therefore, I suggest that as the interaction increases between CCP and customers during the service production process, and that knowledge from customers is integrated with the organization's vertical knowledge structure, the more likely service line innovations will result.

> *Hypothesis 3. As the level of interaction between customers and CCP increases, firms with increasing levels of vertical knowledge structures (that link customer contact personnel with members at higher levels) will see a corresponding increase in service line innovation.*

3.4 CCP Implementation and Performance

The information gained during the interaction between the client and the customer contact personnel can increase the opportunity to obtain customer insights and consumer needs. As a result, CCP can use that information their competitors do not have during the delivery of a service. Those insights can also lead to innovations that enable the service firm to provide new benefits in its offerings (Slater & Narver, 1995; Day & Wensley, 1988). While creating new innovations is important, its impact on performance will ultimately depend on the successful implementation of the innovation.

The literature on innovation has long explored its positive relationship to firm performance (Kuratko, Ireland & Hornsby, 2001; Rothaermel, 2001). Specifically, the literature has looked at how customer knowledge allows firms to benefit from greater efficiency in their service processes as well as the development of new innovations, which leads to increases in customer retention, customer defined quality, and profitability (Slater & Narver, 1995; Zanjani, Rouzbehani & Dabbagh, 2008). Moreover, the utilization of knowledge gained from customers to create innovation is a source of competitive advantage (Stanley & Narver, 1995). As firms continuously learn about their target customers, they can better gauge what their clients' current and future needs are in order to develop and market new services and processes that offer value while meeting those needs (Gordon, Kaminski, Calantone, & Benedetto, 1993). Firms that are motivated to find new solutions to clients' needs are thus likely to gain a competitive advantage and improve performance (Hunt & Morgan, 1995; Narver & Slater, 1990). Therefore, there is a positive relationship with organizational innovations and firm performance.

Customer contact personnel are the conduit by which service firms can obtain novel information from customers. During the interactions, CCP have access to information about evolving customer needs and potentially new service improvements (Bettencourt & Brown, 2003; Pappas & Flaherty, 2007). CCP are not only in the position to identify novel information, but implement that information as well since these employees have the best vantage point to make quicker and better strategic decisions (Day, 1994; Pappas & Flaherty, 2007). To actually implement innovations, it has been suggested that CCPs need some "degree of autonomy over their jobs before they can begin to learn and practice new strategic behaviors" (Peck, 1998: 83). As CCP identify and then utilize information from customers during the interaction, they can better provide the service for the client.

The degree of employee autonomy during interactions with customers can vary from greater independent creativity to more directed action. Higher or lower degrees of autonomy among CCP may also have an impact on the success of turning customer insight into innovation, depending on the nature of the innovation. Thus, the proper level of employee autonomy is an important factor to consider as it provides the context for encouraging creativity, for innovation to occur, and for offering efficiency standards (Lewis, 2000). Given this, I suggest that the levels of autonomy (of CCP) with certain types of innovation will influence firm performance. Figure 2 illustrates the conceptual model— that innovation and autonomy interact to influence organizational performance.

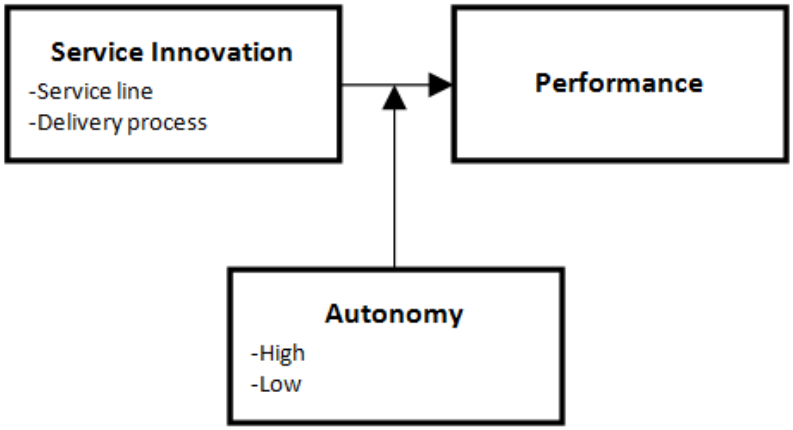


Figure 2: A Model Illustrating the Relationships among Service Innovation, Performance, and Autonomy.

Research has already looked at how organizations desiring significant strategic change through their processes may need to consider modifying employees' responsibilities in order to increase their autonomy (Peck, 1998). New delivery processes may compel front-line employees to make real-time changes to the innovation during the interactions with customers, to match specific customer situations. As CCP have the ability to solve customers' issues during the service delivery, customers will become more satisfied with the service (Bitner, 1990; Bitner, Booms & Tetreault, 1990). Independent-acting front-line employees are best situated to implement delivery processes as they can make real-time adjustments to delivery mechanisms and jointly problem solve with customers. Empowered CCP are likely to deliver the service to customers more effectively as well (Hartline & Ferrell, 1996). Therefore it is expected that increases in delivery process innovations will lead to an increase in performance when customer contact personnel are experience greater autonomy during their

interactions with customers (as CCP will be better positioned to apply the delivery process innovations that meet their customers' needs).

Hypothesis 4A. As autonomy of the CCP increases during the service delivery, firms with high levels of delivery process innovations will see a corresponding increase in performance.

For delivery process innovations, the customer contact personnel need greater autonomy in the delivery of the service to meet their customer's demands. However, service line innovations differ from delivery process innovation in certain key aspects. An organization is entering into an entirely new area of operations when it introduces a new service line (Alam, 2001; Avlontis, Papastathopoulou, & Gounaris, 2001; Skaggs, 2008). Whereas delivery process innovation is providing a familiar service to customers in a new method, a new service line can be potentially unfamiliar to customers and CCP.

If CCP are uncomfortable understanding the new service being offered, then their behavior could impact the service negatively. The literature has looked at how CCP's attitude and behavioral response can negatively affect customers' perceptions of the service encounter (Hartline & Ferrell, 1996). Major contributors to the inability of providing a good service are employees' dissatisfaction or stress, due to conflict and ambiguity in their job (Schneider, 1980; Shamir, 1980).

Similarly, research has found when employees experience ambiguity in their role, then their job performance greatly reduces too (Singh, 1993). CCP with confusing or conflicting role expectations experience decreases in performance as well as decreases in customers' perceived service quality (Schneider, 1980). Customers as well as CCP may

need to be educated on the benefits of the service and familiarize themselves with how it fits into their overall operations. Therefore, the focus for customer contact personnel may be to provide a consistent and standardized service to familiarize themselves with the service as well as customers unfamiliar to the new service line.

The literature has discussed the reduction of employee autonomy with the organization's desire for consistency, control, and predictability in their practices (Hackman & Wageman, 1995; Klein, 1991, 1994). As the new service line becomes standardized, variety and complexity of the service itself becomes limited. Service standardization is the extent to which tasks are pre-established (Aranda, 2002). It allows for predictability, preplanning, and easier process control which in turn allows for uniformity in service quality (Bowen & Youngdahl, 1998) and decreases service variability (Lievens, Moenaert & Jegers, 1999).

Given the firm's desire to provide consistent services, the role of CCP will require less skilled improvisation in favor of a more efficient and effective role. As a result, reduced autonomy from CCP would be needed. Tighter control over employee autonomy may stem from a need to reduce costs, where the goal is to achieve "active employee commitment to organizational objectives" that are "compatible with the 'quality enhancement' or 'innovation' strategies" (Kakavelakis, 2010: 558; Schuler & Jackson, 1987). Moreover, greater levels of CCP autonomy related to the new service line may be counter-productive as the lack of consistency could result in confusion of the new service innovation by customers, as research has found service standardization decreases the uncertainty that is commonly associated with the interaction between the customer and the provider of the service (Lievens, Moenaert & Jegers, 1999).

Therefore, the service organization must reinforce the regularity of the service by replicating the new service with minimal deviation. Customer contact personnel who are given greater autonomy during interactions with customers may prove harmful if they are acting independently to the point they are offering a different service than intended. With low levels of autonomy, the emphasis is placed on controlling employee performance externally in order to sustain adherence to pre-defined standards (Kakavelakis, 2010). Low levels of employee autonomy can also be utilized by firms in order for employees to perform both effectively and efficiently (Lewis, 2000), especially when launching an entirely new service line. This is in line with existing literature that has found reducing service variability through service standardization contributes to the commercial success of new services (Lievens, Moenaert & Jegers, 1999; Maister & Lovelock, 1982; Shostack, 1984, 1987). As the new service line becomes more legitimized over time and increased awareness, higher levels of autonomy may eventually prove useful—but initially the standardization and legitimizing of selling and implementing the basic new offering will likely yield better performance.

While requiring some creativity from CCP, it is more desirable for new service lines to have a degree of uniformity employed by all employees in order to legitimize the new service line. With less latitude for CCP to deviate from the service offering, service organizations can employ a new service line broadly, which will lead to an increase in performance. Therefore it is argued that increases in the service line innovations will lead to an increase in performance as customer contact personnel are given less autonomy during their interaction with customers.

Hypothesis 4B. As autonomy of the CCP increases during the service delivery, firms with high levels of service line innovations will see a corresponding decrease in performance.

The preceding hypotheses will examine how the levels of customer interaction with CCP will lead to more innovation in service firms, how knowledge structures matched with level of CCP-customer interaction can lead to different types of innovation, and how levels of autonomy (of CCP) with certain types of innovation will influence performance. See Figure 3 for the overall conceptual model on which the proposed research rests. In the following chapter, the methodology intended to test these hypotheses with are discussed.

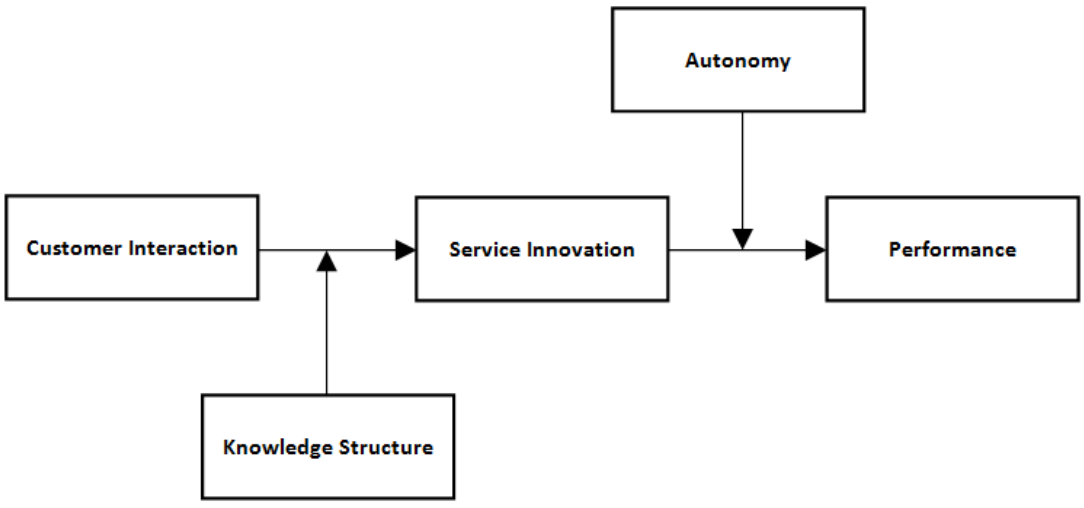


Figure 3: Overview of Conceptual Model.

CHAPTER 4

METHODOLOGY

In this section, the firms included in the research are discussed, as well as the measures utilized for the independent and dependent variables and the data sources for these measures. The section also presents the analysis methods that were used to test the hypotheses.

4.1 Research Sample

The intangible nature of services requires service firms' customer contact personnel to interact to a greater degree with clients than their manufacturing counterparts (Mills, 1986; Mills, Hall, Leidecker, & Margulies, 1983; Mills & Posner, 1982). Therefore, this study focused on firms with service-only activities. The service sector represents an appropriate population since service firms typically encounter opportunities to attain continuous knowledge from their customers (due to the inherently indivisible relationship between customers and CCP during service production). Further, the service sector contains a broad range of industries, which can facilitate the increase in generalizability of results.

Several criteria were created to ensure an appropriate sample. Only publicly traded service organizations were selected as data can be independently gathered. This ensured finding secondary support data and objective data like firm performance and age of company. Moreover, service firms with greater than $10 million in sales and more than 50 employees were targeted. This guideline increases the likelihood that firms

participating have the resources and formalized strategic activities to pursue innovation activities (O'Brien, 2003; Skaggs & Huffman, 2003; Huffman & Skaggs, 2010).

Lastly, service firms that operated mainly in a single industry (receiving a minimum of 70% of their sales from one industry) were targeted. The criterion of 70% of revenue being generated by one business has been supported by the literature (Rumelt, 1974; 1991). It helps ensure that there is only one (overall) level of customer contact that the firm experiences. Moreover, this helps increase the likelihood that a firm's interaction with customers and innovation activity occurred in the same industry (Huffman & Skaggs, 2010). This also helps increase the probability that top executives understand the level of customer contact required during service production (Skaggs & Galli-Debicella, 2011).

Using these criteria, data was obtained from sources such as the D&B Key Business Database and Mergent Online through the University of Massachusetts Amherst Library resources, as well as Compustat Database made available by the Wharton Research Data Services. The screening process identified 791 companies for inclusion in the survey population from the Compustat database.

4.2 Survey Construction

A survey was sent to the top management and front-line managers of service firms to provide insights on customer interactions with customer contact personnel in regards to innovation in service firms. The survey was used to collect data in regards to knowledge flows, innovation, employee autonomy, and customer contact. The sources for these variables and the analysis undertaken are described later in this section.

Several measures were taken in an effort to minimize any distortion in responses to the survey. First, the survey was thoroughly examined and critically reviewed by peers prior to the final mailing using a pilot questionnaire. This helped clarify the wording of questions that are potentially confusing for informants. It provided an estimate of how long it took to complete the survey. It also ensured face validity to establish the survey's ease of use, readability, and clarity (Burton & Mazerolle, 2011; Phellas, Bloch, & Seale, 2011).

The layout of the questionnaire was organized in order to clearly present the information. In addition, the survey was available in an online format for the respondent's convenience. (Specifically, Qualtrics, a web-based survey software package, was employed in order for participants to take the survey online.) The purpose was to increase potential informants' likelihood of participating in the study and completing the survey (Bradburn, Sudman, & Wansink, 2004). In addition, appropriate Institutional Review Board approval was obtained prior to commencement of field work.

Moreover, the survey targeted upper level executives. Upper- level executives were selected as they have a deep understanding of their "firm's competitors, industry dynamics, and their own strategic positioning than would managers of diversified organizations" (Skaggs & Youndt, 2004: 89). Moreover, service firms possess high concentrations of labor, since labor is a primary resource (Mills, 1986). Therefore, it is likely that top level executives of service organizations would be familiar with in-depth knowledge relating to the firm's human capital (Skaggs & Youndt, 2004) including customer contact personnel.

However, it is recognized that top level executives are somewhat removed from the actual production taking place in the service. Therefore, I asked the same survey questions to managers of CCP to ensure that the responses (from both managers and executives) would correctly represent the organization's processes (even though I expected both groups to have the same view). Although the objective was to obtain one response from each group from a firm, there were instances where only one survey was obtained from a firm (for example, an executive completes the survey but not the manager of CCP). For that reason, an interrater agreement analysis was performed (on the responses obtained from organizations with completed surveys from both groups). Interrater agreement measures the extent to which two groups agree when rating the same set of questions (Banerjee, Capozzoli, McSweeney, & Sinha, 1999).

An interrater agreement analysis on responses obtained from organizations with completed surveys from both groups was run using Tobin's Q as the test parameter. An independent samples t-test was used as the testing mechanism to demonstrate interrater agreement. The analysis showed that the two groups were not significantly different from each other. Specifically, there was homogeneity of variances for Tobin's *q* scores between the two groups, as assessed by Levene's test for equality of variances (p=.691). Moreover, there was no statistically significant difference in mean Tobin's *q* score between the two groups, t (33)= -.213, p=.832. The results therefore suggest that there was interrater agreement between the two groups. Thus the use of a single response to the survey from a firm is acceptable (specifically the responses from top level executives were used for the final results of the study).

The efforts in data collection resulted in 97 usable surveys from upper level executives, which represented a response rate of 12.3%. Even though this is lower than what is considered desirable, it reflects the given restrictions on the organizations being sampled. This also reflects the difficulty of securing participation from upper level executives. Moreover, it is consistent with response rates in other research utilizing surveys of similar target respondents (Skaggs & Huffman, 2003; Skaggs & Youndt, 2004).

4.3 Informants

4.3.1 Upper Level Executives

To test the hypotheses, the questionnaire survey method was utilized. In order to collect the appropriate organizational data, it was important to identify key informants who are the most knowledgeable about the relevant organizational questions being asked (Huber & Power, 1985). Therefore, surveys were sent to upper level executives, as well as managers of customer contact personnel, to better understand the innovation process taking place within the organizations. In order to secure an adequate volume of responses to support the research at hand, multiple target respondents were identified for each organization. Considering the practical issues regarding locating respondents and response rates in surveys (Bradburn, 1992), following Huber & Power (1985), the survey targeted one senior level executive and one manager of customer contact personnel per organization to complete the survey.

Upper level executives provide important insights concerning the organization as a whole, including strategic direction and initiatives, as well as the industry (Hambrick & Mason, 1984; Hitt & Ireland, 1985). These executives also are expected to be aware of

the firm's overall decision patterns related to innovation. To make sure those insights are properly captured, senior managers found at the corporate level were targeted. Members of this group include CEO, CFO, COO, and President.

Upper level executives were identified from sources like S&P's Net Advantage Database, the company's website, as well as members of various alumni networks (the Harvard Graduate School of Business Administration and McKinsey Consulting).

4.3.2 Managers of Customer Contact Personnel

In addition to identifying an informant from senior management, the direct supervisors of customer contact employees were located within the organization. Customer contact personnel are in a unique position to not only understand customer needs but to also recognize opportunities for innovations (Lilien, Morrison, Searls, Sonnack, & von Hippel, 2002; von Hippel, 1986). Those insights are often shared with or observed by their direct managers. These frontline managers have an understanding of their employees' interactions with customers due to their span of control. This is because they integrate knowledge across the frontline units (Dhar & Mishra, 2001). Frontline managers also play an important role, by understanding the firms' knowledge management (Tseng, 2011). As a result, they understand how knowledge is transferred within the firms' knowledge structure. Therefore these members of an organization offer insight on information shared by customers during the interaction of the service and how that information is shared with the organization.

Direct managers of customer contact personnel were identified by contacting the service organizations through several means, including being located by their respective

top level executives in the firm as well as various alumni networks (the Harvard Graduate School of Business Administration and McKinsey Consulting).

4.4 Measures

The following measures for knowledge flows, innovation, employee autonomy, and customer contact rely on adapting previously used items from existing research. The items were re-worded in order to be consistent with the specific research agenda of this paper. The actual items that were used in the study are listed in Appendix B. The measure for performance utilizes objective data obtained from secondary sources.

Knowledge flows. A fairly broad notion of knowledge flow is knowledge and the directionality of that knowledge being transferred (Mom, van den Bosch & Volberda, 2007; Schulz 2003). Knowledge flow relates to transference as it occurs between a source and a target along a channel (Gupta & Govindarajan, 2000). The exchange of knowledge can include competences or valuable external market data like information about customers or competitors (Gupta & Govindarajan, 1991; Ordonez de Pablos, 2004; Shiah-Hou & Chen, 2007).

The literature on organizational knowledge flows greatly discusses two types of structures: vertical and horizontal knowledge flows (Gupta & Govindarajan, 2000; Schulz, 2001, 2003; Serenko, Bontis & Hardie, 2007; Shiah-Hou & Chen, 2007). Vertical knowledge flows transfer knowledge from a subunit to units outside its peer group (such as supervising units). Horizontal knowledge flows transfer knowledge from a subunit to peer subunits within an organization (Gupta & Govindarajan, 2000; Schulz, 2001, 2003).

For the purpose of this study, knowledge flows are considered along the same two dimensions: vertical and horizontal. Vertical knowledge flows comprise of knowledge coming from persons (and units) at different hierarchical levels (higher or lower) than the recipient. Horizontal knowledge flows consist of the knowledge that is carried and acquired from persons (and units) at the same hierarchical level (Gupta & Govindarajan, 2000; Mom, van den Bosch & Volberda, 2007; Schulz, 2001, 2003). Based on the works of Monteiro, Arvidsson, and Birkinshaw (2008) and Mom, Van Den Bosch, & Volberda (2007), this variable was measured using an eighteen item scale (a nine item scale for vertical knowledge flows and a nine item scale for the horizontal knowledge flows).

Innovation. Innovation is knowledge and information processed to create new knowledge, which is then focused towards the creation of commercial and viable solutions (Du Plessis, 2007; Herkema, 2003). Innovation pulls from several sources of knowledge and information (Cohen & Levinthal, 1990; Fuglsang, Sundbo & Sorensen, 2011; von Hippel, 2005). One important source of knowledge for organizations is their customers (Mills & Morris, 1986; von Hippel, 1986).

Knowledge obtained from customers during employee-client interactions is a valuable resource for an organization as it can lead to novel innovations (von Hippel, 1986; 1989). The close relationship between clients and the customer contact personnel leads to the sharing of valuable and exclusive knowledge during the service production process. Knowledge also enables organizations to coordinate resources into new ways that provide greater value for their customers than their competitors (Kogut & Zander, 1992; Nonaka, 1994).

However, the type of innovation output that service firms experience is much different than their manufacturing counterparts. As discussed in the literature review, many typologies of innovation exist, but they have limited application to service firms. This is due to the service's intangibility and the interaction between client and service provider in order to provide the service (Alam, 2006; Gago & Rubalcaba, 2007; Gallouj, 2002; Hipp, Thether & Miles, 2000; Mansury & Love, 2008).

When it comes to services, firms can experience innovations in the form of new services and new service delivery processes (Huffman & Skaggs, 2010; Skaggs, 2008). Service innovations include new solutions, concepts, or value propositions that lead to new services. Delivery process innovations include novel methods of designing and producing services (Hipp, Thether & Miles, 2000; Skaggs, 2008). This variable was measured using a six item scale for service innovations and a seven item scale for delivery innovations, in line with the works of Huffman and Skaggs (2010), Skaggs (2008), as well as Hipp, Tether and Miles (2000).

Employee autonomy. Autonomy is generally defined as the degree of control the employee has in completing his/ her work (Connolly & Connolly, 2003; Gebauer, Krempl, Fleisch, & Friedli, 2008). It looks at whether they have the responsibility to make important decisions related to their work. It is also is the extent to which employees are given the latitude to carry out their tasks without excessive supervision (Conley, Muncey & You, 2006; Connolly & Connolly, 2003; Gebauer, Krempl, Fleisch, & Friedli, 2008).

Employee autonomy is particularly important to service firms since service organizations "produce an intangible output that cannot be readily stored and they tend to be labor intensive, requiring a close, personal interface between the producer and the consumer of the output" (Mills & Posner, 1982: 437). The degree of employee autonomy (during interactions with customers) ranges greatly from directed action to greater independent. This provides the context for innovation to take place, as well as offering efficiency standards (Lewis, 2000). Thus, the proper level of employee autonomy is considered.

This variable was measured using a nine item scale in line with the works of Connolly and Connolly (2003) and Hartline and Ferrell (1996). This section of the survey assessed the degree of judgment and initiative that customer contact personnel are involved with during the production of the firm's service offering.

Customer contact. Customer contact is generally referred to the presence of the customer in the service system during the provision of service (Chase, 1978; Chase & Tansik, 1983; Cook, Goh & Chung, 1999). It is conceptualized as the percentage of time a customer is present in the service delivery system relative to total service time (Chase, 1978). Therefore, the higher the percentage of time, the greater the contact there is (Swartz & Iacobucci, 2000).

The construct of customer contact has been operationalized in the literature into several distinct elements including duration of communication between the customer and employee, the value of information exchanged, and mutual confiding and trust between customer and employee in an exchange (Kellogg & Chase, 1995). The degree of contact

is usually examined from the perspective of the organization as it is considered an important strategic variable in service design and positioning (Chase & Tansik, 1983; Swartz & Iacobucci, 2000). It can lead to design of new services (Bearden, Malhotra, & Uscátegui, 1998; Cook, Goh, & Chung, 1999), affect the potential efficiency of service operations (Chase, 1978; 1981; Chase, Northcraft, & Wolf, 1984), and is a determinant in perception of overall service quality (Soteriou & Chase, 1998; Parasuraman & Colby, 2000).

Customer contact can lead to innovation within organizations, as knowledge shared and developed in the process of delivering existing services can include novel insights and services. In order to measure this variable, a fourteen-item scale adapted by the works of Kellogg and Chase (1995), as well as Chan, Yim, and Lam (2010), was used.

Firm Performance. The literature recognizes performance as a complex, mutli-dimensional construct, whereby specific measures indicate different aspects of performance (Chakravarthy, 1986; Kaplan & Norton, 1996; Venkatraman & Ramanujam, 1986). Therefore, multiple measures of performance will be included in the study to provide a broader assessment. These measures include objective data obtained from secondary sources.

The following performance measures, Tobin's *q* and return on investment (ROI), are popular market and accounting based ratios, which are commonly used in service business analyses (Bharadwaj, Bharadwaj & Konsynski, 1999; Bharadwaj & Menon, 1993; Sin, Tse, Yau, Lee, & Chow, 2002; Skaggs & Youndt, 2004). ROI will allow for

comparisons across multiple industries (Skaggs & Youndt, 2004). The average over a three year period was calculated in order to minimize the potential that performance data from an unusually good or bad year might confound the analysis (Amit & Livnat, 1989; Dubofsky & Varadarajan, 1987). Tobin's *q* is also included, as ROI may present difficulties where investment levels are almost nonexistent in certain industries, like consulting and banking (Channon, 1978). Tobin's *q* ratio is the "capital market value of the firm divided by the replacement value of its assets" that "incorporates a market measure of firm value which is forward-looking, risk-adjusted, and less susceptible to changes in accounting practices" (Bharadwaj, Bharadwaj & Konsynski, 1999: 1009; Montgomery & Wemerfelt, 1988). These objective measures were derived from secondary sources to avoid the potential of common method bias.

4.5 Control Variables

To reduce exogenous factors, the following variables were included as statistical controls in the analysis because of their potential impact on innovation in service firms: firm size, firm age, CEO tenure, industry complexity, human capital, munificence in industry, dynamism, leverage, as well as research and development (R&D) intensity.

Firm size. Firm size is controlled for, as it may influence innovation output (Modi & Mabert, 2010). Larger firms are more likely to engage in innovations than smaller firms. This may be the result of economies of scale in the adaptation and development of new technology (Cohen & Klepper, 1996) or the greater ability of larger firms to finance

innovation projects (Almeida & Fernandes, 2008). In order to measure firm size, the number of employees was used (Lin & Lin, 2010).

Firm age. The variable firm age is included as it may impact an organizations' commitment to pursue an entrepreneurial orientation. Older firms are less likely to engage in innovate than younger firms (Acs & Preston, 1997; Almeida & Fernandes, 2008). This may be the result of younger firms being more dynamic than older firms, who may experience weaker learning possibilities (Almeida & Fernandes, 2008). In order to measure firm age, the number of years since the firm's founding was used.

CEO Tenure. The variable CEO tenure can also impact the firm's commitment to innovation. The tenure of executives can influence the level of innovation an organization undertakes (Bantel & Jackson, 1989: Huffman & Skaggs, 2010). This may be the result of longer-tenured executives experiencing greater psychological commitment to the firm's status quo (Staw & Ross, 1980; Stevens, Beyer & Trice, 1978). Longer-tenured CEOs may also lose touch with their organizational environment. As a result, they do not make the changes and risky investments to keep the firm evolving over time (Lin, Lin, Song, & Li, 2009; Miller 1991). In order to measure CEO tenure, the number of years the executive has served as the company's CEO was used (Huffman & Skaggs, 2010).

Human Capital. Human capital relates to the skills and expertise of an organization's employees (Becker, 1993; Schultz, 1971; Skaggs & Youndt, 2004). Human capital is controlled for as there may be differentiation in the level of CCP

capabilities. Service firms can create value through their selection, development and use of human capital (Lepak & Snell, 1999; Hitt, Bierman, Shimizu, & Kochhar, 2001; Hitt, Bierman, Uhlenbruck, & Shimizu, 2006). Service employees use their expertise and experience to perform services to each client (Hitt, Bierman, Uhlenbruck, & Shimizu, 2006).

Human capital examines the selection, training, and education of employees. Selection involves the hiring of potential employees with high levels of education and expertise from the labor market. Training is about the internal developmental activities of current employees (Skaggs & Youndt, 2004). The education of employees involves the level of education current employees have obtained. In order to measure this variable, a thirteen-item scale (comprised of an eight item scale for customer contact personnel skill level and a five item scale for customer contact personnel training) from by the works of Skaggs and Youndt (2004), as well as Youndt and Snell (2004), was used.

Environmental dynamism. Dynamism is a gauge of the volatility of the firm's environment, where greater levels of volatility imply greater levels of uncertainty that the firms encounter (Dess & Beard, 1984; Boyd, Dess, & Rasheed, 1993). Dynamism is controlled as it may impact the operating environment of the firm. Dynamism is the continuity of changes in the organizations' environment (Zahra, Neubaum & Huse, 1997). These changes can occur from many sources, including changes in the competitive landscape, regulations, customer needs, as well as complex technological developments. Highly dynamic environments are more likely to encourage innovation, entrepreneurial behavior, and intensify rivalry through increased new firm entry into the market (Miller,

1983; Covin & Slevin, 1989). The level of dynamism was calculated by regressing industry sales on time over a five year period; then the standard error of the beta is determined and divided by mean sales for each industry (Boyd, 1990; Skaggs & Huffman, 2003).

Industry complexity. The intensity of competitive rivalry within an industry is controlled for. Industry complexity indicates the degree of competition in an industry that develops from concentration, or the market share dominance of one or more firms (Dess & Beard, 1984). Markets that are competitive can experience higher rates of developments and introductions (Aboulnasr, Narasimhan, Blair & Chandy, 2008; Modi & Mabert, 2010). To measure this variable, the Herfindahl index was used as a proxy (Fang, Palmatier & Grewal, 2011; Hendricks & Singhal, 1997).

Munificence in industry. The munificence within an industry is controlled for. Munificence is the degree the environment can maintain industry growth (Dess & Beard, 1984; Starbuck, 1976). Organizations in munificent task environments are more likely to experience greater access to resources including financing and customer markets (Daft, 2001).

Industry sales growth is measured as it can influence innovativeness of the market. New products are more likely to be introduced in markets which experience faster growth (e.g., Hendricks & Singhal, 1997). The industry sales growth was represented by measuring over a five-year period for industries specified at a six-digit NAICS level (Fang, Palmatier & Grewal, 2011; Modi & Mabert, 2010).

Leverage. The leverage ratio is an evaluation of how effectively an organization utilizes its resources to produce revenues. In order for organizations to be effective innovators, they must maintain sufficient slack resources (Damanpour, 1991; Singh, 1986; Zajac, Golden & Shortell, 1991). One of the foremost ways for financial slack to manifest itself is through a relatively low leverage ratio. A more conservative financial structure (with low leverage), allows firms greater financial slack as potential lenders will view those firms as safer to provide access to lines of credit which can then be used for innovation-related investments (O'Brien, 2003; Brealey & Myers, 1996). In order to measure leverage, the book value of debt was divided by the total market value of the firm (O'Brien, 2003). The average over a three year period controlled for any unusual conditions that may impact the variable at any point in time (Friedman, 1985).

Research and development intensity (R&D). The R&D intensity of an organization (relative to its industry rivals), denotes the importance of innovation to a firm. Large investments on R&D are not a guarantee that organizations will be effective innovators. Yet, firms that invest in R&D at greater rates than their competitors are more likely competing on the basis of innovativeness (O'Brien, 2003). Therefore, R&D intensity, measured by the organizations' spending on research and development as a percentage of sales revenue (Dyreng, Hanlon & Maydew, 2010; O'Brien, 2003), was controlled for over a three year period to mitigate issues with volatility.

4.6 Analysis Methods

4.6.1 Scale Validation and Reliability

This paper utilizes both reliability and validity techniques; specifically, Cronbach's alpha is used to demonstrate inter-item reliability and confirmatory factor analysis is used to demonstrate construct validity (Andreou et al., 2011). Cronbach's alpha is a standardized inter-item correlation coefficient, and a value larger than 0.70 is considered satisfactory for this statistic. A reliability analysis was conducted for each of the eight scales used in the current investigation. If an alpha exceeded the minimum target reliability of 0.70, a scale was considered to have good reliability (Kline, 2000; Nunnally, 1978).

The survey data was also factor analyzed to test the validity of the several constructs. In order to test whether the measures of the constructs proposed in the survey are consistent with the literature, confirmatory factor analysis was used. This analysis is appropriate when validating measurement models where there is an existing theoretical basis to specify a factor model (Stevens, 1996).

The measures for knowledge flows, innovation, employee autonomy, customer contact, and human capital were guided by adapting previously used items from predefined frameworks. This was done in order to be consistent with the specific research agenda. The results of the reliability and validity methods for measuring the constructs in this paper are described below. For reference, Appendix C contains the outcome for the for the reliability and validity methods. Moreover, Table 1 summarizes the characteristics of the final measures of the constructs in this paper.

The construct "vertical knowledge flows" consisted of nine questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .914. Since the value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). Factor analysis also strongly suggests that all nine survey items designed to test the construct loaded heavily on a single factor. The construct "horizontal knowledge flows" also consisted of nine questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .891. Since the value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). Factor analysis strongly suggests that all nine survey items designed to test the construct loaded heavily on a single factor.

The construct "employee autonomy" consisted of nine questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .812. Since the value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). The factor analysis showed that seven of the nine survey items designed to test the construct loaded on a single factor. Two of the original autonomy items did not load significantly onto a single factor, and thus were eliminated from the scale. Review of the conceptual foundation for these two items (in light of the factor analysis) suggests that they relate more to employee procedure than to autonomy *per se*. Therefore, based on the factor analysis results, a seven item scale was retained for autonomy. The items included in the final scale are displayed in Appendix D. Alpha for this new scale is .934.

The construct "service innovation" consisted of six questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .939. Since the alpha of the scale is higher than 0.8, it would be considered good reliability (Nunnally,

1978). Running a factor analysis suggests that all six survey items designed to test the construct loaded heavily on a single factor.

The construct "delivery innovation" consisted of seven questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .932. Since this value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). Moreover, the factor analysis confirmed that all survey items loaded on a single factor.

The construct "customer contact" consisted of fourteen questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .915. Since it is higher than 0.8, it would be considered good reliability (Nunnally, 1978). However, the factor analysis indicated that the fourteen survey items designed to measure "customer contact" do not constitute a single construct. Upon inspection, four of the survey questions were removed from the scale. In light of the factor analysis, a review of the conceptual foundation for these four items suggest they were too specific (and repetitive) in terms of communication for customer contact. For example, the questions asked if employees primarily communicate face-to-face, through writing, or verbally. Moreover, one question (one whether customers spend time discussing topics that are personal) was too different from the other questions relating to customer contact. Therefore, based on the factor analysis results, a ten item scale was retained for customer contact. Alpha for this new scale is .939. The items included in the final scale are displayed in Appendix D.

When it came to “human capital” there were two components: customer contact personnel skill level and customer contact personnel training. The “CCP skill level” construct consisted of eight questions. The scale had a high level of internal consistency,

as determined by a Cronbach's alpha of .932. Since this value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). Factor analysis also strongly supported the "CCP skill level" as all eight survey items designed to test the construct loaded heavily on a single factor. The “CCP training” construct for “human capital” consisted of five questions. The scale had a high level of internal consistency, as determined by a Cronbach's alpha of .929. Since this value of alpha is higher than 0.8, it would be considered good reliability (Nunnally, 1978). Factor analysis strongly supported the "CCP training" construct as all survey items loaded on a single factor.

Table 1
Scale Characteristics

Construct	Number of Items	Cronbach’s Alpha
Knowledge flows (Vertical)	9	.914
Knowledge flows (Horizontal)	9	.891
Innovation (Service)	6	.934
Innovation (Delivery)	7	.939
Employee autonomy	7	.934
Customer contact	10	.939
Human capital (Employee skill level)	8	.930
Human capital (Employee Training)	5	.929

4.6.2 Common Methods Bias

The present research incorporates variables that are perceptions of the respondents taking the survey. Since some of the perceptual variables are comprised of dependent variables collected at the same time as independent variables, the potential for common methods bias impacting the results must be considered. Therefore, several design techniques were used to avoid the impact that common methods bias may have on the study.

The literature discussed how gathering data from a variety of sources can help reduce the impact posed by common methods bias (Kerlinger & Lee, 1999; Schwab, 1999). To avoid common method bias, objective data should be used whenever possible. For data on performance, Tobin's *q* and return on investment (ROI) were used based on objective data. However, since it is not possible to use objective measures for every variable, I have included additional measures suggested by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) in the design and data collection of the survey. This includes carefully avoiding any explicit reveal of the research's purpose as a way to help ensure that the dependent variables are not obvious to the respondents. This will also help avert percept-percept bias, as the respondents will not be able to predict the relationships being studied and then attempt to respond in line with their preconceptions on those relationships. Moreover, respondents were strongly assured that their responses were kept confidential. This reduces the desirability-biased responses, where respondents may answer questions based on perceived organizational need (Podsakoff et al., 2003).

In addition to the previous precautions, a statistical test– Harmon's single factor test– was employed to assess the presence of common methods bias (see Podsakoff et al., 2003). This test involved loading all the variables into an exploratory factor analysis. If a considerable amount of common method variance is present, one general factor would account for the majority of the variance among the variables (see Podsakoff et al., 2003; Podsakoff, Todor, Grover, & Huber, 1984). For this paper, there was no single factor that accounted for more than half of the total variance (which would mean that one general factor is accounting for a large part of the variance). Instead, the emergence of distinct *a priori* factors appeared during the analyses. This indicates a reduced likelihood

of this type of bias impacting the findings (see Podsakoff & Organ, 1986; Podsakoff, Todor, Grover, & Huber, 1984). Taking all these precautions to detect common methods bias helped ensure greater confidence in the validity of the paper's findings.

4.6.3 Non-Response Bias

Non-response bias occurs if the replies of those taking the survey differ from the potential answers of those who did not take the survey. As a result, non-response to the survey may introduce bias and reduce effective sample size (Vink et al., 2004). To test for this possibility, an independent-samples t-test was run to determine if there were differences in respondent-nonrespondent organizational differences based on performance. The analysis showed that the two groups were not significantly different from each other. Specifically, there was homogeneity of variances for Tobin's *q* scores for respondents and non-respondents, as assessed by Levene's test for equality of variances (p=.715). Moreover, there was no statistically significant difference in mean Tobin's *q* score between respondents and non-respondents, t (131)= -.203, p=.839. The results therefore suggest that there was no response bias in the data.

4.6.4 Hypotheses Testing

There were three sets of hypotheses that were considered by this investigation. The first looked at the relationship between customer contact and firm innovation; the second looked at the relationship between customer contact, knowledge flow structures, and types of service-related innovation; the third looked at the relationship between

autonomy, types of innovation, and performance. Means, standard deviations, and correlations are shown in Table 2 for all the variables in the study.

Table 2
Correlations, Means, and Standard Deviations

Variables		Mean	Std. Deviation	1	2	3	4	5	6	7
Vertical knowledge	1	3.824	1.248							
Horizontal knowledge	2	3.914	1.154	.761**						
Employee Autonomy	3	4.769	1.308	.396**	.436**					
Service Innovation	4	4.394	1.465	.520**	.474**	.324**				
Delivery Innovation	5	4.268	1.226	.558**	.528**	.370**	.758**			
Customer Contact	6	4.704	1.271	.429**	.557**	.696**	.409**	.454**		
Firm size	7	149053.86	434325.744	-.169	-.122	-.059	-.138	.042	-.084	
Firm age	8	50.784	44.495	-.128	-.114	-.139	-.115	-.090	-.075	.074
CEO tenure	9	7.474	6.979	.069	.122	.166	.022	.005	.101	-.131
Human capital (skill level)	10	4.241	1.340	.317**	.318**	.192	.334**	.237*	.418**	-.348**
Human capital (CCP training)	11	4.159	1.374	.474**	.569**	.303**	.466**	.479**	.444**	-.108
Industry complexity	12	.0741	.077	-.003	-.002	.007	-.001	.068	-.115	.002
Munificence	13	.960	.129	.075	.065	.019	.054	.017	.065	.044
Dynamism	14	.036	.047	-.019	-.009	-.033	-.022	-.011	-.030	-.129
Leverage	15	7.652	13.901	.103	.077	-.152	.027	.096	.119	-.080
R&D Intensity	16	.000	.002	-.008	.119	-.014	.010	.084	-.014	-.051
Tobin's *q*	17	1.453	1.494	.172	.185	.095	.141	.189	.017	.033
ROI	18	11.231	14.178	-.058	-.055	.014	-.111	-.114	-.098	-.045

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Table 2 (continued)
Correlations, Means, and Standard Deviations

Variables (continued)		8	9	10	11	12	13	14	15	16	17
Vertical knowledge	1										
Horizontal knowledge	2										
Employee Autonomy	3										
Service Innovation	4										
Delivery Innovation	5										
Customer Contact	6										
Firm size	7										
Firm age	8										
CEO tenure	9	-.050									
Human capital (skill level)	10	-.135	.203*								
Human capital (CCP training)	11	-.129	.175	.337**							
Industry complexity	12	-.108	.014	-.033	.030						
Munificence	13	.079	.024	-.066	.106	-.326**					
Dynamism	14	-.237*	-.008	.201*	-.031	.303**	-.815**				
Leverage	15	-.008	.062	.254*	.002	-.029	-.013	.045			
R&D Intensity	16	-.036	-.024	.049	.018	-.110	.195	-.085	-.087		
Tobin's *q*	17	-.256*	-.125	-.017	.116	.036	.009	.221*	-.291**	.081	
ROI	18	-.045	-.075	-.096	-.076	.011	-.078	.193	-.362**	.013	.431**

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

4.6.4.1 Testing for Hypothesis 1

To test the hypothesis concerning customer contact and firm innovation (Hypothesis 1), ordinary least squares regression analysis was used. This analysis helps to better understand the relationship between the level of firm innovation (the dependent variable) and the level of customer contact that customers have with CCP (the independent variable). The statistical program SPSS was used to conduct an ordinary least squares regression analysis to reveal if a significant relationship exists between the level of the customer contact interaction and firm innovation. Moreover, the regression

revealed the direction of the relationship. As predicted, a significant relationship was found to exist. The nature of the relationship suggests that service firms that engage in higher levels of customer contact experience an overall level of increased innovation, and Hypothesis 1 is supported. The results support this hypothesis ($b = .454$, $p < .001$). See Appendix E for full details.

4.6.4.2 Testing for Hypothesis 2 and 3

To examine the "fit" between knowledge structures and customer contact influencing innovation (Hypothesis 2 and 3), hierarchical regression analysis was used. First the control variables were entered into the regression equation (firm size, firm age, CEO tenure, human capital, industry complexity, munificence in industry, dynamism, leverage, as well as R&D intensity), then the main effects variables (customer contact and knowledge flow structure). If significant effects are detected, then it would suggest direct relationships between these variables and innovation. This procedure eliminated any main effects on innovation prior to examining potential knowledge structures-customer contact interaction, or fit, effects (Stone & Hollenbeck, 1989). Then the cross products of each of the knowledge flow structure variables and customer contact (e.g. customer contact x horizontal knowledge structure) were entered. If the interaction terms accounts for significant residual variance in the dependent variable, then there is evidence that moderation exists.

A significant R^2 change here would signify that knowledge structures and customer contact interact to influence innovation. To better understand the specific relationships between the knowledge structures-customer contact interactions and

innovation, the individual interaction terms in the regression equations were examined. Upon examining the relationships between knowledge structures, customer contact, and innovation, the regression model should indicate that adding knowledge structures and customer contact interactions into the hierarchical regression analysis in the second step will explain significant incremental variance in innovation. Therefore, it would show strong support for the general proposition that knowledge structure characteristics interact with the level of customer contact to influence organizational innovation.

For hypothesis two, the addition of customer contact, vertical knowledge and horizontal knowledge to the model led to a statistically significant increase in R^2 of .452, $F(13, 83) = 5.261$, $p < .001$. When examining the relationships among the customer contact, horizontal knowledge structure, and delivery process innovation, the regression model indicates that adding the horizontal knowledge and customer contact interaction into the hierarchical regression analysis explains significant incremental variance in innovation ($\Delta R^2 = .043$, $\Delta F = 6.974$, $p < .05$). Thus, there is support for the general proposition that aspects of horizontal knowledge structure interacts with the level of customer contact to influence delivery process innovation. See Table 3 for full details on each regression model and the graph of the interaction is shown in Appendix F.

Table 3

Results of Hierarchical Regression Analysis of Horizontal Knowledge Structure, Customer Contact, and Delivery Process Innovation

Variables:	**Step 1**	**Step 2**
Control and Main Effects		
Firm size	4.166E-7	4.357E-7*
Firm age	.000	.001
CEO tenure	-.011	-.013
Human capital (Skill level)	.003	-.023
Human capital (CCP training)	.209*	.191**
Industry complexity	1.439	1.173
Munificence	-1.226	-.915
Dynamism	-2.601	-2.034
Leverage	.005	.005
R&D intensity	72.546	50.820
Customer contact	.208**	-.542*
Horizontal knowledge structure	-.015	-1.028**
Vertical knowledge structure	.388***	.396***
Interaction Effects		
Customer contact X Horizontal knowledge structure		..211**
R^2	..452	.495
F	5.261***	5.735***
ΔR^2	.452	..043
ΔF	5.261***	6.974**

*p < .10
** p < .05
***p < .01

For hypothesis three, the addition of customer contact, horizontal knowledge, and vertical knowledge to the model led to a statistically significant increase in R2 of .371, $F(13, 83) = 3.767$, $p < .001$. When examining the relationships among the customer contact, vertical knowledge structure, and service line innovation, our regression model indicates that adding the vertical knowledge and customer contact interaction into the hierarchical regression analysis did not explain a significant incremental variance in innovation. Contrary to my expectation, I did not find a significant relationship between the interaction of vertical knowledge and customer contact, and service line innovation. See Table 4 for full details on each regression model.

Table 4

Results of Hierarchical Regression Analysis of Vertical Knowledge Structure, Customer Contact, and Service Line Innovation

Variables:	Step 1	Step 2
Control and Main Effects		
Firm size	-7.760E-8	-1.629E-7
Firm age	-.001	-.001
CEO tenure	-.017	-.021
Human capital (Skill level)	.149	.136
Human capital (CCP training)	.235*	.224*
Industry complexity	.347	.134
Munificence	-.725	-1.080
Dynamism	-3.150	-4.126
Leverage	-.005	-.005
R&D intensity	1.327	-15.335
Customer contact	.149	-.420
Horizontal knowledge structure	-.004	.023
Vertical knowledge structure	.380**	-.443
Interaction Effects		
Customer contact X Vertical knowledge structure		.165
R^2	.371	.390
F	3.767***	3.743***
ΔR^2	.371	.019
ΔF	3.767***	2.529

*p < .10
** p < .05
***p < .01

4.6.4.3 Testing for Hypothesis 4A and 4B

To examine the "fit" between innovation and autonomy influencing organizational performance (Hypothesis 4A and 4B), hierarchical regression analysis was used. First the control variables were entered (firm size, firm age, CEO tenure, human capital, industry complexity, munificence in industry, dynamism, leverage, as well as R&D intensity), then the main effects variables (autonomy and innovation). If significant effects were detected, the significant effects would suggest direct relationships between these variables and firm performance. This procedure eliminated any main effects on performance prior to examining potential innovation-autonomy interaction, or fit, effects (Stone & Hollenbeck, 1989). Then the cross products of each of the innovation variables

and autonomy (i.e. delivery process innovation x employee autonomy, along with service line innovations x employee autonomy) were entered as a set. Entering the interaction terms all together better control for possible multi-collinearity among the variables. If the set of interaction terms accounts for significant residual variance in the dependent variable, then there is evidence that moderation exists.

A significant R^2 change here would signify that innovation and autonomy interact to influence organizational performance. To better understand the specific relationships between the innovation-autonomy interactions and performance, both interaction terms in the regression equations were examined.

For both Hypothesis 4A and 4B, I use ROI as one of the performance variables. The addition of employee autonomy, service line innovation and delivery process innovation to the model was non-significant. When examining the addition of the employee autonomy and delivery process innovation interaction, as well as the employee autonomy and service line innovation interaction, into the hierarchical regression analysis, the results were also non-significant. See Table 5 for full details on the regression model.

Table 5

Results of Hierarchical Regression Analysis of Delivery Process Innovation, Service Line Innovation, Employee Autonomy, and Performance (ROI)

Variables:	Step 1	Step 2
Control and Main Effects		
Firm size	-2.559E-6	-2.712E-6
Firm age	.005	.004
CEO tenure	-.097	-.106
Human capital (Skill level)	-.508	-.565
Human capital (CCP training)	-.479	-.529
Industry complexity	-9.169	-11.157
Munificence	33.047*	32.984
Dynamism	141.751**	142.204**
Leverage	-.383***	-.395***
R&D intensity	-331.646	-319.978
Employee autonomy	.154	2.620
Service line innovation	-1.217	-1.062
Delivery process innovation	.678	3.385
Interaction Effects		
Employee autonomy X Delivery process innovation		-.554
Employee autonomy X Service line innovation		-.045
R^2	.223	.228
F	1.836*	1.591*
ΔR^2	.223	.004
ΔF	1.836*	.222

*p < .10
** p < .05
***p < .01

For both Hypothesis 4A and 4B, Tobin's *q* is another performance variable. The addition of employee autonomy, service line innovation and delivery process innovation to the model was also non-significant. When examining the addition of the employee autonomy and delivery process innovation interaction, as well as the employee autonomy and service line innovation interaction, into the hierarchical regression analysis, the results were also non-significant. See Table 6 for full details on the regression model.

Table 6

Results of Hierarchical Regression Analysis of Delivery Process Innovation, Service Line Innovation, Employee Autonomy, and Performance (Tobin's *q*)

Variables:	Step 1	Step 2
Control and Main Effects		
Firm size	7.881E-8	1.002E-7
Firm age	-.005	-.005
CEO tenure	-.022	-.019
Human capital (Skill level)	-.081	-.072
Human capital (CCP training)	.005	.009
Industry complexity	-.692	.057
Munificence	6.572***	6.382***
Dynamism	22.178***	21.514***
Leverage	-.034***	-.030***
R&D intensity	-19.587	-19.875
Employee autonomy	-.015	-.996***
Service line innovation	-.056	-.698
Delivery process innovation	.329*	-.141
Interaction Effects		
Employee autonomy X Delivery process innovation		.104
Employee autonomy X Service line innovation		.132
R^2	.342	.397
F	3.320***	3.562***
ΔR^2	.342	.055
ΔF	3.320***	3.718**

*p < .10
** p < .05
***p < .01

In addition to the method above, just the cross products of *each* of the innovation variables and autonomy were entered (e.g. delivery process innovation x employee autonomy). If the interaction terms accounts for significant residual variance in the dependent variable, then there is evidence that moderation exists.

A significant R^2 change here would signify that innovation and autonomy interact to influence organizational performance. To better understand the specific relationships between the innovation-autonomy interactions and performance, the individual interaction terms in the regression equations were examined. Upon examining the relationships between innovation, autonomy, and performance, the regression model

should indicate that adding innovation and autonomy interactions into the hierarchical regression analysis (in the second step) would explain significant incremental variance in organizational performance. Therefore, it would show strong support for the general proposition that aspects of innovation interact with autonomy to influence organizational performance.

As stated earlier, I have two different measures of performance- Tobin's *q* and return on investment (ROI). Using ROI as a performance variable for Hypothesis 4A, the addition of just employee autonomy and delivery process innovation to the model was non-significant. When examining the addition of the employee autonomy and delivery process innovation interaction into the hierarchical regression analysis, the results were also non-significant. However, when using Tobin's *q* as a measure of performance, the results were different. A significant relationship was found between the interaction of employee autonomy and delivery process innovation, and firm performance ($b = .202$, $p < .05$). Thus, there was partial support for the general proposition that aspects of employee autonomy with delivery process innovation influences performance. See Table 7 for full details on each regression model and the graph of the interaction is shown in Appendix G.

Table 7

Results of Hierarchical Regression Analysis of Delivery Process Innovation, Employee Autonomy, and Performance

	ROI		Tobin's *q*	
Variables:	**Step 1**	**Step 2**	**Step 1**	**Step 2**
Control and Main Effects				
Firm size	-2.009E-6	-2.128E-6	1.042E-7	1.491E-7
Firm age	.006	.005	-.005	-.004
CEO tenure	-.088	-.097	-.021	-.018
Human capital (Skill level)	-.687	-.752	-.089	-.065
Human capital (CCP training)	-.563	-.618	.002	.022
Industry complexity	-8.150	-9.880	-.645	.007
Munificence	32.644	32.488	6.553***	6.612***
Dynamism	142.943**	143.242**	22.233***	22.120***
Leverage	-.371***	-.381***	-.034***	-.030***
R&D intensity	-257.299	-241.170	-16.161	-22.234
Employee autonomy	.169	2.370	-.015	-.843**
Delivery process innovation	-.371	2.200	.281**	-.687*
Interaction Effects				
Employee autonomy X Delivery process innovation		-.536		.202**
R^2	.218	.221	.341	.386
F	1.947**	1.813*	3.623***	4.015***
ΔR^2	.001	.004	.037	.045
ΔF	.038	.376	2.350	6.089**

*p < .10
** p < .05
***p < .01

Using ROI as a performance variable for Hypothesis 4B, the addition of employee autonomy and service line innovation to the model was non-significant. When examining the addition of the employee autonomy and service line innovation interaction into the hierarchical regression analysis, the results were also non-significant. However, when using Tobin's *q* as a measure of performance, the results were different. A significant positive relationship was found between the interaction of employee autonomy and service line innovation, and firm performance (b = .180, p < .05). Therefore, there was no support for the general proposition that aspects of employee autonomy with service

line innovation would negatively influence performance. See Table 8 for full details on each regression model.

Table 8
Results of Hierarchical Regression Analysis of Service Line Innovation, Employee Autonomy, and Performance

	ROI		Tobin's *q*	
Variables:	**Step 1**	**Step 2**	**Step 1**	**Step 2**
Control and Main Effects				
Firm size	-2.262E-6	-2.293E-6	2.231E-7	2.358E-7
Firm age	.005	.006	-.005	-.005
CEO tenure	-.101	-.102	-.024	-.024
Human capital (Skill level)	-.536	-.527	-.095	-.099
Human capital (CCP training)	-.380	-.379	.054	.053
Industry complexity	-8.461	-9.937	-.347	.255
Munificence	32.591*	33.396*	6.350***	6.021***
Dynamism	141.276**	143.429**	21.947***	21.069***
Leverage	-.375***	-.383***	-.030***	-.027***
R&D intensity	-285.692	-301.232	2.738	9.077
Employee autonomy	.251	2.083	.032	-.715**
Service line innovation	-.837	1.277	.129	-.733*
Interaction Effects				
Employee autonomy X Service line innovation		-.441		.180**
R^2	.222	.225	.318	.358
F	1.999**	1.852**	3.257***	3.556***
ΔR^2	.005	.003	.013	.040
ΔF	.284	.287	.825	5.187**

*p < .10
** p < .05
***p < .01

A summary of the results is provided below in Table 9.

Table 9
Summary of Results of Hypothesis Tests

Hypothesis 1: There will be a *positive* relationship between the level of customer contact that customers have with CCP and the level of firm innovation.	Supported.
Hypothesis 2. As the level of interaction between customers and CCP increases, firms with increasing levels of *horizontal* knowledge structures (that link customer contact personnel together) will see a corresponding increase in *delivery process* innovation.	Supported.
Hypothesis 3. As the level of interaction between customers and CCP increases, firms with increasing levels of *vertical* knowledge structures (that link customer contact personnel with members at higher levels) will see a corresponding increase in *service line* innovation.	Not supported.
Hypothesis 4A. As autonomy of the CCP increases during the service delivery, firms with high levels of *delivery process* innovations will see a corresponding *increase* in performance.	Supported (for Tobin's *q* with single interaction term).
Hypothesis 4B. As autonomy of the CCP increases during the service delivery, firms with high levels of *service line* innovations will see a corresponding *decrease* in performance.	Not supported (results significant in opposite direction for Tobin's *q* with single interaction term).

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Discussion

This paper has explored the importance of knowledge in innovation. Specifically, I discussed the distinctive role of CCPs in service organizations by highlighting the unique position they occupy. Moreover, I tested how information from customers that are generated by the interaction with CCPs influence the degree of innovation, as well as how different methods for sharing this information can impact the types of innovation these firms pursue. I also examined the impact CCPs have on the successful implementation of innovations. In so doing, the aim has been to substantially expand the understanding of how knowledge from customer-CCP interactions drive innovation and performance in firms. Having offered and presented the results from testing these hypotheses, I next discuss and interpret those results.

The results offered limited support for the hypotheses in the paper, however that support offers an interesting depiction about knowledge from customers to customer contact personnel. I believe that it can add to the extant literature on innovation and knowledge, customer contact personnel, and knowledge dissemination. In what follows, I examine in greater detail the implications of these findings.

5.1.1 Discussion of Results About Relationship Between Customer Contact and Firm Innovation

Hypothesis 1 argued that since CCP can obtain knowledge from customers in regards to innovation, and the degree of interaction can dictate how much knowledge is shared between them, then there can also be implications for overall innovation experienced by the service organization. Specifically, greater interactions between the customer and CCP will lead to an increase in innovation for firms. In part because CCP can learn more novel knowledge directly from their clients, they can be better positioned to gauge what their clients' needs (both current and future) are.

As expected, the results support this conjecture. Moreover it lends strong support for a customer and CCP interaction approach in order to understand issues relating to knowledge transfer, as well as innovation within service firms. This result also highlights the importance of the CCP's role in service organizations, as they sit at the nexus of information gathering and information utilization. Firms who recognize the unique position their CCPs are in can better position themselves to obtain knowledge from their customers in order to take advantage of new opportunities in the market.

5.1.2 Discussion of Results About Relationship Between Customer Interaction, Knowledge Structure, and Innovation

Hypotheses 2 argued that as the level of interaction between customers and CCP increases during the service production, and that knowledge is integrated with increases in the degree of the firm's *horizontal* knowledge structure, the more likely *delivery process* innovations will result. The finding supports the notion that service firms that

adopt horizontal knowledge structures in order to better handle knowledge from customer and CCP interactions will be better able to respond to customer needs, and hence experience greater delivery process innovation.

The literature has already looked how customers provide important information that lead to new ideas and services (Lillien et al., 2002; von Hippel, 1986). However, this paper argues that as CCP interact with their customers, CCP gain a better understanding about the best practices for implementing the service itself. These essential employees end up learning not only about the customer, but additional details about the service delivery process. Moreover, they discover ways on how to provide and deliver that service to customers.

When CCPs share that knowledge with their peers through the firm's horizontal knowledge structure, greater opportunities to see new ways of delivery the service arises. The horizontal knowledge structure helps to connect CCP with other CCP; and the greater the degree of horizontal knowledge structure, the more likely CCP will share information amongst their peers. Thus, service organizations must be keenly aware of the importance of their horizontal knowledge structure in sharing knowledge from CCP-customer interactions, in order for service firms to benefit from delivery process innovations.

However, the study did not find support for Hypothesis 3. This hypothesis predicted that as the level of interaction between CCP and customers increases, and that knowledge is integrated with increases in the degree of the firm's *vertical* knowledge structure, the more likely *service* line innovation will result.

CCP who interact with customers gain important knowledge about underlying needs of customers that may not be met by current service offerings. CCP are in a distinct position to determine whether customers' needs are unmet by the services currently offered. Moreover, CCP were in a good position in the organization to integrate new knowledge, as well as champion new initiatives for their organization to pursue (Pappas & Flaherty, 2007). I predicted that CCP would share that knowledge with the service firm's management via the organization's vertical knowledge structure. The reasoning is that management would be in a better position to generate new service innovation, as they control the resources that are required to build new service lines. While I believe the theoretical justification for the hypothesis was sound, I also believe there is a logical explanation for this non-finding.

Even though management and other employees can distinguish opportunities for the organization to engage in service line innovations, it still requires the firm to develop an entire new service. Selling new services is truly innovative, and as such, there are inherent difficulties associated with that innovation for both customers and the firm (Winston & Cahill, 1995). It can become very costly for firms to build new service lines (Baschab & Piot, 2005). In particular, service organizations need to invest heavily in a new service line in order for the new service to be successful. For example, service firms would need to invest in research in order to validate demand for the service line. Service firms may also need to spend money to advertise the new service and attract new customers, but also educate existing customers on the new service offering in order to maintain their loyalty (Candi, 2010; Storey & Easingwood, 1999; Winston & Cahill, 1995). Moreover, service firms need to invest a significant amount of capital in the new

service offering itself to develop that new opportunity (Storey & Easingwood, 1999). This may even include hiring new employees or re-training existing ones, as well as upgrading support from hardware or software (Baschab & Piot, 2005).

Service firms may also find it is a challenge to commit existing resources to a new and perhaps unfamiliar service. This is especially challenging in professional services firms that tend to stress current billability above investment back into the firm. It would require a strong commitment by the firm's upper management, as well as culture shift throughout the organization, to look toward investment in future services (Baschab & Piot, 2005). Moreover, a service that is complicated to implement and confuses customers can be harder to sell. With that complication, it brings with it increased costs for supporting existing customers in their struggle (Candi, 2010).

Considering all these legitimate concerns, upper management may actively elect to not enter into a new service line. The potential risks, especially associated with diverting service firm resources and increasing costs, may outweigh the potential gain associated with creating new service line innovations.

5.1.3 Discussion of Results About Relationship Between CCP Autonomy, Innovation, and Performance

It was argued in Hypotheses 4A that as CCP autonomy increases during the service delivery, firms with higher levels of *delivery process* innovations would see a corresponding increase in performance. In order to test this, I used two different measures of performance, ROI and Tobin's *q*. Despite both measures being based on objective

data, the findings were of particular interest as there was partial support depending on the analysis run, as well as the performance measure itself.

When the interaction terms were entered all together, the study did not find support for Hypotheses 4A and 4B. While I believe the reasoning for the hypotheses were sound, I believe there is an explanation for these outcomes. The interaction terms were entered all together to better control for possible multi-collinearity among the variables. Multi-collinearity (also called collinearity) is a phenomenon that exists when "two or more independent variables are highly correlated; this makes it difficult if not impossible to determine their separate effects on the dependent variable" (Vogt, 2005: 198). Multi-collinearity will have different impacts on the development of a model and the inference from the model (Salkind, 2007). Multi-collinearity can reduce the statistical power of the analysis, making some variables statistically insignificant when they should be significant (Newhouse, 1969).

To diagnose for multi-collinearity, the variance inflation factor (VIF) was examined in SPSS. A VIF between 5 and 10 indicates high correlation that may be problematic. And if the VIF goes above 10, then it indicates that the regression coefficients are poorly estimated due to multi-collinearity (Hair, Jr., Black, Babin, & Anderson, 1995). The output revealed that the largest VIF value for the employee autonomy and innovation factors was 2.354, which indicates some correlation but not enough to be overly concerned about. Nonetheless, I removed potentially correlated predictors from the model in case multi-collinearity was an issue.

On examining the results when just the cross product of the innovation variable and autonomy was entered (i.e. delivery process innovation x employee autonomy), I

found that the hypothesis was supported when performance was measured by Tobin's *q*. Utilizing this performance measure, a significant relationship was found between the interaction of employee autonomy and delivery process innovation, and firm performance ($b = .202$, $p < .05$). However, the hypothesis was not supported, with no significance obtained, when performance was measured by ROI. While I believe the theoretical justification for the hypothesis, and the use of both measures of objective data were sound, I also believe there is a logical explanation for this partial finding.

ROI is widely used as a measure of business performance (Chen & Lee, 1995; Landsman & Shapiro, 1995). However, the validity of ROI (net income divided by the book value of assets) has been questioned (Chen & Lee, 1995; Fisher & McGowen, 1983). The literature has acknowledged that there is conflicting evidence in regards to the efficacy of ROI as informational measure of an organization's underlying economic fundamentals (Arcelus, Mitra, & Srinivasa, 2005; Chen & Lee, 1995; Landsman & Shapiro, 1995). It has been argued that ROI is inadequate indicator in part because the profit stream is not properly related to the investment that produced it (Fisher & McGowen, 1983).

Researchers have also found that Tobin's *q*, is a better measure of business performance. Tobin's q shows the market value of the firm in relation to the market value of its assets (Arcelus, Mitra, & Srinivasa, 2005). Specifically, the literature has shown that relative to ROI, Tobin's q is subject to a lesser degree to the errors caused by accounting conventions (Chen & Lee, 1995). In part, because the measure contains greater information including the firm's future profitability, in addition to reflecting the risk factor in the firm's business (Chen & Lee, 1995). Moreover, the measure

encompasses a market measure of organizational value that is forward-looking, risk-adjusted, and less susceptible to changes in accounting practices (Bharadwaj, Bharadwaj & Konsynski, 1999; Montgomery & Wemerfelt, 1988).

In regards to this paper, Tobin's *q* also offers a far more superior measure of the market returns on investment for innovations than do the common accounting measurements such as ROA, ROI, and ROE (Arcelus, Mitra, & Srinivasa, 2005; Boasson & Boasson, 2006). Tobin's *q* reflects a number of variables in addition to the recorded assets of the company. It incorporates the market (or investor) sentiment, analysts' views of the firm's prospects, and the intellectual capital of the company. For those reasons, Tobin's *q* becomes more meaningful at measuring the intangible value associated with a firm's innovations. Tobin's *q* measures the extent to which the market recognizes the organization's future rather than the past profitability, as well as the organization's potential competitive advantage and growth opportunities (Boasson & Boasson, 2006). Taking this into account, Tobin's *q* may be a better predictor of performance for firms studied in this paper.

When using Tobin's q, the result then suggests that as autonomy for CCP increases, firms with high levels of delivery process innovations will experience greater performance. My finding suggests that greater autonomy for CCP enabled them to make real time changes during the delivery of the service depending on the specific customer situation. This is in line with previous research that suggests that empowered CCP are more likely to deliver services to their customers more effectively (Hartline & Ferrell, 1996). Moreover, as CCP can solve customers' issues, customers will become more satisfied with the service (Bitner, 1990). Satisfied customers are more loyal than other

customers, less expensive to preserve than attracting new clients, and can lead directly to greater sales (Kuvaas & Dysvik, 2009). As a result, service firms will see an increase in performance as they experience greater satisfaction from their customers.

However, the study did not find support for Hypothesis 4B when just the cross product of the innovation variable and autonomy was entered (i.e. service line innovation x employee autonomy). This hypothesis predicted that as the level of CCP autonomy increases during the service delivery, firms with higher levels of *service line* innovations would see a corresponding *decrease* in performance. In order to test this, I again utilized two different measures of performance, ROI and Tobin's *q*. Despite both measures being based on objective data, the findings were of particular interest.

Using ROI as a performance variable, for Hypothesis 4B, the results were insignificant. Moreover, using Tobin's *q* as a performance variable, there was no negative relationship between employee autonomy, service line innovation, and firm performance. However, using Tobin's *q*, a significant *positive* relationship was found between the interaction of employee autonomy and service line innovation, and firm performance ($b = .180$, $p < .05$).

I argued in the paper that for service line innovations, CCP may be initially uncomfortable understanding the new service being offered. CCP may not be familiar with the new service or need to be educated on the benefits of the service. Moreover, CCP may experience ambiguity during the initial offering of the service. In turn, that would negatively impact the outcome and reduce the legitimacy of the new service. For those reasons, I reasoned that it would be better if the organization provided a consistent service to their clients by reducing CCP autonomy. The standardization and legitimizing

of selling and implementing the basic new offering would initially yield greater performance.

Nevertheless, the results (using Tobin's *q* as the measure) suggest that aspects of employee autonomy with service line innovation would *positively* influence performance. I suspect that the reason why a significant relationship was found in the opposite direction is the simple need for CCPs to have the discretion to modify their work to accommodate their customers. The literature has discussed how reducing autonomy can cause output restrictions, which consequently becomes a threat to productivity (Choi, Leiter, & Tomaskovic-Devey, 2008). While the focus for CCP is to provide the new service with some degree of uniformity in order to standardize and legitimize the new service line, there is an importance of CCP having greater autonomy to satisfy customers' needs. If a problem with a client arises, CCP must have the flexibility and independence to be able to handle those issues. Thus, in order to handle and meet the needs of customers during the offering of a new service, a greater degree of autonomy may be required at all times.

Additionally, a higher degree of autonomy is a necessity for professional services (Macky, & Boxall, 2008). These employees tend to be professionals who require a greater amount of authority to carry out their work (Hodson & Sullivan, 2008). Greater autonomy is also important to those service industries that are able to segment customers' needs and provide greater value, usually at a price premium (Boxali & Purcell, 2008). For example, research in the hotel industry found that luxury hotel operators improved revenue and customer retention through empowering front-line employees to personalize service (Haynes & Fryer, 2000).

Taken together, the results for Hypotheses 4A and 4B demonstrate strong support for selecting the proper level of employee autonomy. Increased autonomy provides the context for encouraging creativity and satisfying customers, especially when dealing with new services and delivery processes. This in turn will see a corresponding increase in firm performance.

5.2 Implications

The results found in this study have implications for the body of knowledge in the field of management, as well as practical implications for service firms. One implication is that innovation within a service firm may be partly created through their interactions with clients. The literature has long focused on firms gathering information from customers through traditional methods like surveys, interviews, and focus groups (Leonard & Rayport, 1997; Griffen & Hauser, 1993; Wah, 1999). In these situations, firms are proactively seeking out what their customers' needs are. This paper implies that in addition to those methods, firms should also look towards different methods that capture their current interactions with customers, which are occurring on a continuous basis.

The second implication of this research is the important role that CCPs play. The literature traditionally views these employees as the ones responsible to produce and deliver the actual service to their clients (Chase, 1978; Hartline & Ferrell, 1996; Saser, 1976; Singh, 2000). They are the indispensable interface that exists between the firm and their clients. This paper supports those arguments by showing that CCPs are in a unique position of acquiring and utilizing knowledge from their customers. Moreover, this paper

strongly suggests that CCP play a key role in service innovation. Not only are CCP collecting customer information, but they are able to share that information with others and help translate that information into innovations for the service firm. Thus, their role in the organization becomes even more heightened. Therefore it is implied that service firms should invest in developing and training their CCP—not only in the delivery of the service, but to actually recognize how their interactions with clients can lead to greater information as well as how that information can lead to opportunities of innovations. Future research could specifically examine how firms go about training customer contact personnel to identify potentially beneficial information from their interactions with customers.

The final implication involves the significant value in transmitting knowledge from the customer-CCP interaction throughout the rest of the organization through the firm's knowledge structure. The literature has already discussed the value of knowledge flow structures in facilitating organization wide sharing of information (Shulz, 2001; Ordonez de Pablos, 2004). These structures help detect, transfer, and utilize intra-organizational knowledge (Serenko, Bontis & Hardie, 2007). This paper not only supports that existing research, but also proposes that attention should be paid to CCP access to horizontal knowledge structures. Horizontal flows pass knowledge from one subunit to peer subunits (Schulz, 2001, 2003). They typically are used for decisions affecting the direct users and their peers (Aoki, 1986; Montiero et al., 2008; Schulz, 2001, 2003). This paper implies that firms, who are better at developing and employing such structures for their CCP to share knowledge from their interactions with customers, will enjoy a competitive advantage. New knowledge may impact existing routines for

CCPs and perhaps also help create new routines that will keep service firms competitive. Moreover new knowledge shared among CCP can help CCPs seek more new knowledge, and in turn helps build resources and capabilities that create a competitive advantage. As such, the function of this knowledge structure in the firm becomes even more important and future research could focus on this topic.

5.3 Research Limitations and Future Research

Though I believe the present study provides support for the role of CCP as a mechanism that can impact innovation in service firms, there are some limitations. I also address areas where additional research could be explored.

The first limitation is the sole use of executives to assess the degree of interaction among their CCP and customers. Even though top management have an innate understanding of the organization as a whole (Hitt & Ireland, 1985), including who their clients are and what needs they have, it is recognized that these executives are somewhat removed from the actual service production. Managers of CCP deal directly with CCP and have a deeper understanding of their employees' interactions with customers. Given that executives do not directly interact with CCP, I still feel confident that CEOs of the service firms can reasonable determine the degree of interaction between CCP and customers. Moreover, the interrater agreement analysis that was performed showed that the two groups were not significantly different from each other in their responses. However, it would be interesting for future research to include the perspective of frontline managers in addition to upper level executives.

Another limitation is the assumption that service firms possessed an overall level of customer contact with their customer contact personnel. Even though this is true for many service organizations, it is possible that a service firm could have multiple points of access with CCP, each with different levels of contact. I am confident that CEOs of the service firms with multiple points of access can reasonable determine an overall level of customer contact for their firm. Moreover, the sample is restricted to single-industry firms, reducing the possibility of multiple points of access. However, it would be interesting for future research to explore whether different points of access and levels of customer contact for service firms provide greater opportunities for generating innovation for firms.

Another limitation was gathering data. It was increasingly difficult to get respondents to complete the survey. This is in turn limited the sample size. Despite my assurance that the survey would not take long to complete, and that the results would remain confidential, some respondents were still not willing to fill out the survey. While the sample size is adequate (especially considering the level of employee targeted), additional respondents could have provided clearer results.

An additional area to investigate is whether the number of years held in the position of CCP impacts the ability to distinguish novel information from interactions with clients. It would be interesting to see whether CCP with more years interacting with clients are better spotting different and notable pieces of knowledge over their newer counterparts. An argument could be made that because of their tenure, they are more complacent and less likely to seek out new information. Future research could investigate

this notion and determine if service firms should institute new training procedures to encourage constant learning.

5.4 Conclusion

This study shows a clear linkage between the level of interaction CCP have with customers and innovation in service firms. The results show that that firms who aligned horizontal knowledge structures with high levels of interaction between customers and CCP achieve an increase in delivery process innovation. In addition, that service firms with high levels of delivery process innovations enjoy an increase in performance when there is an increase in CCP autonomy during the service delivery. The results demonstrate the important role CCP play in the innovation process within a service organization, and offer insights into knowledge acquisition and dissemination of service firms. In closing, the findings presented here not only support the literature concerning the importance of customer knowledge, but contribute to the field by exploring the unique positions and interaction effects of CCP. My hope is that future scholars will utilize the ideas presented here in order to continue exploring CCP interaction with customers and the mechanisms that drive innovation within these organizations.

APPENDIX A

COVER LETTER FOR STUDY

Department of Management
121 Presidents Drive
Amherst, MA 01003
www.isenberg.umass.edu

Dear respondent,

We are researchers at the Isenberg School of Management at the University of Massachusetts in Amherst, Massachusetts. We are asking you to participate in a research project to study the process of innovation within service organizations. This is a short survey that asks a variety of questions about your service firm.

This survey is part of a research project that focuses on the acquisition and utilization of knowledge obtained from customers, in the innovation process. We hope to better understand how these factors improve the innovation process at companies like yours, and share these results with you. In recognition of your contribution to the research, a copy of the findings will be provided to you.

To ensure meaningful results, please follow all the instructions and respond candidly. It should be emphasized that there are no right or wrong answers. Moreover, your responses will remain strictly confidential and will only be analyzed after being combined with the responses of other participants.

The survey should take no more than 10 minutes to complete. If you have any questions about the survey or the study, please feel free to contact us at (203) 215-0785 or at agalli@som.umass.edu. This study has been approved by the Isenberg School of Management Institutional Review Board.

Thank you in advance for agreeing to participate in this study. The contribution of your time to this research is greatly appreciated, and is invaluable to the ultimate success of this project.

Sincerely,

Alexandra Galli-Debicella
Strategic Management Doctoral Candidate
University of Massachusetts
(Principal Co-Investigator)

Bruce C. Skaggs
PhD
University of Massachusetts
(Principal Co-Investigator)

APPENDIX B

SURVEY QUESTIONNAIRE

SERVICE FIRM INNOVATION SURVEY

Please read the following statement and then answer the questions below.
Customer contact personnel (CCP) are the front-line employees responsible for delivering services to the customer. These employees interact with the customer during the service production and are chiefly responsible for delivering the actual service. Through this interaction, CCPs are likely to gain information about the customer.

1. **Knowledge Flows**: This section of the survey assesses how your firm acquires knowledge from the customer contact personnel and transfers it throughout the organization.

A. How accurately do the following statements describe your firm's transfer of knowledge that customer contact personnel acquire from customers?

	Not Accurate						Very Accurate
1. Our company holds regular meetings, between customer contact personnel and employees located at different hierarchical levels of the organization, to share information about our customers.	1	2	3	4	5	6	7
2. Our company has a great information system (e.g. technology) for moving customer information from CCPs to different levels of the organization.	1	2	3	4	5	6	7
3. We have an information system that constantly brings information about the customer from our CCPs to the top levels of the organization.	1	2	3	4	5	6	7
4. We have an information system that gives top levels of the organization ready access to customer information obtained by CCPs.	1	2	3	4	5	6	7
5. Routine reports, about the customer from the managers of CCPs, are made available to the top levels of the organization.	1	2	3	4	5	6	7
6. Relevant and up-to-date information from CCPs is made available to the top levels of the organization.	1	2	3	4	5	6	7
7. When CCPs make changes to the service, the top levels of the organization are notified.	1	2	3	4	5	6	7
8. When CCPs get new ideas from customers, the top levels of the organization are notified.	1	2	3	4	5	6	7
9. When CCPs develop "best-practices" for performing the service, the top levels of the organization are notified.	1	2	3	4	5	6	7

B. How accurately do the following statements describe your firm's transfer of knowledge (on how the service is delivered) <u>among your customer contact personnel</u>?

	Not Accurate						Very Accurate
1. Our company holds regular cross-departmental meetings to share information on how to improve the delivery of service to customers.	1	2	3	4	5	6	7
2. Our CCPs attend meetings with other CCPs across the organization about how to deliver the service.	1	2	3	4	5	6	7
3. Our CCPs regularly document and share their observations about how they deliver services to customers.	1	2	3	4	5	6	7
4. Our CCPs continually share information happening at the customer level with our organization's information system.	1	2	3	4	5	6	7
5. Our information system provides CCPs ready access to information happening at the customer level across the firm.	1	2	3	4	5	6	7
6. We move our CCPs to different areas of the firm (e.g., different location, different department) to share information about how the services are delivered to customers.	1	2	3	4	5	6	7
7. Adaptations to the service delivery by CCPs are shared with other CCPs across the firm.	1	2	3	4	5	6	7
8. CCPs are encouraged to share their "best practices" on delivering services to customers with other CCPs across the firm.	1	2	3	4	5	6	7
9. New ideas about delivering the services, which CCPs get from customers, are communicated with other CCPs across the firm.	1	2	3	4	5	6	7

2. **Employee Autonomy**: This section of the survey assesses the degree of autonomy that customer contact personnel have when delivering your firm's service offering.

How accurately do the following statements describe your <u>customer contact personnel's</u> role during the service delivery and final service outcome?

	Not Accurate						Very Accurate
1. CCPs are encouraged to take the initiative when serving customers.	1	2	3	4	5	6	7
2. CCPs are encouraged to "think outside of the box" when serving customers.	1	2	3	4	5	6	7
3. CCPs are trusted to do their work the way they think is best when serving customers.	1	2	3	4	5	6	7

4. CCPs do not need to get management's approval before they handle customer problems.	1	2	3	4	5	6	7
5. CCPs can use their own judgment to solve problems for customers.	1	2	3	4	5	6	7
6. CCPs can be creative when addressing customers' particular needs.	1	2	3	4	5	6	7
7. CCPs are allowed to significantly alter the service without needing management's approval.	1	2	3	4	5	6	7
8. CCPs have manuals that described precisely how they are to perform during the service.	1	2	3	4	5	6	7
9. CCPs often follow standard operating procedures when serving customers.	1	2	3	4	5	6	7

3. **Innovation**: This section of the survey assesses the degree and type of innovation present in your firm.

A. How accurately do the following statements describe your firm's level of new services?

Relative to all competitors in our industry…

	Not Accurate						Very Accurate
1. We offer more new services than our competitors.	1	2	3	4	5	6	7
2. We regularly increase our service range of offerings to customers.	1	2	3	4	5	6	7
3. The pace of service innovation at my firm beats our competitors.	1	2	3	4	5	6	7
4. We are considered to be "cutting edge" when it comes to developing new services.	1	2	3	4	5	6	7
5. We regularly introduce new or significantly improved services.	1	2	3	4	5	6	7
6. We regularly allocate resources to develop new innovative services.	1	2	3	4	5	6	7

B. How accurately do the following statements describe your firm's extent of delivering services?

Relative to all competitors in our industry…

	Not Accurate						Very Accurate
1. We routinely develop better ways to deliver services to customers.	1	2	3	4	5	6	7

2. We repeatedly introduce new or significantly improved methods of service production.	1	2	3	4	5	6	7
3. We frequently introduce changes in the customers' buying behavior.	1	2	3	4	5	6	7
4. We frequently find improvements to the service production process.	1	2	3	4	5	6	7
5. We continually introduce new or significantly improved supporting activities for our service production processes.	1	2	3	4	5	6	7
6. We routinely find ways to improve employees' productivity during the service production process.	1	2	3	4	5	6	7
7. We routinely find ways to improve employees' performance during the service production process.	1	2	3	4	5	6	7

4. **Customer Contact**: This section of the survey assesses the degree and type of contact between customers and employees within the service firm during the service encounters.

Please answer the following questions based on the typical interaction your customer contact personnel (front-line employees) have with your customers (clients/patients/patrons) in the normal conduct of their job.

Relative to all competitors in our industry, in our firm:

	Not Accurate						Very Accurate
1. Employees spend a lot of time in communication with customers during the service.	1	2	3	4	5	6	7
2. Employees are very quick responding back to customers' questions and needs.	1	2	3	4	5	6	7
3. Employees primarily communicate face-to-face (in-person) with customers during the service.	1	2	3	4	5	6	7
4. Employees primarily communicate with customers through writing (e.g. email) during the service.	1	2	3	4	5	6	7
5. Employees primarily communicate with customers verbally (e.g. phone, Skype) during the service.	1	2	3	4	5	6	7
6. Employees partner with customers to develop solutions during the service.	1	2	3	4	5	6	7
7. Employees include customers in the service process to affect the quality of the service.	1	2	3	4	5	6	7
8. Employees need to continuously cooperate with customers in order to provide the service.	1	2	3	4	5	6	7
9. Customers feel comfortable trusting and confiding with our employees during the service.	1	2	3	4	5	6	7
10. Customers spend a lot of time discussing topics that are personal with our employees during the service.	1	2	3	4	5	6	7

11. Customers provide suggestions to our employees for improving the service outcome.	1	2	3	4	5	6	7
12. Customers have a high level of participation in the service process.	1	2	3	4	5	6	7
13. Customers are very involved in deciding how the services should be provided.	1	2	3	4	5	6	7
14. Customers jointly decide with our employees on the outcome of the service.	1	2	3	4	5	6	7

5. **Human Resources**: This section of the survey assesses the skill level and training of your customer contact personnel.

A. How accurately do the following statements describe the skill level of the customer contact personnel in your firm?

Relative to all competitors in our industry, our firm:

	Not Accurate						Very Accurate
1. Hires employees with high levels of prior experience.	1	2	3	4	5	6	7
2. Hires employees with high levels of prior training.	1	2	3	4	5	6	7
3. Hires employees with high levels of education.	1	2	3	4	5	6	7
4. Hires employees with expertise in their particular jobs and functions.	1	2	3	4	5	6	7
5. Hires employees who are creative.	1	2	3	4	5	6	7
6. Hires employees who develop new ideas and knowledge.	1	2	3	4	5	6	7
7. Hires employees who are widely considered the best.	1	2	3	4	5	6	7
8. Hires employees who are highly skilled.	1	2	3	4	5	6	7

B. How accurately do the following statements describe the training (for customer contact personnel) that takes place in your firm?

Relative to all competitors in our industry, our firm:

	Not Accurate						Very Accurate
1. Spends more money per employee on training.	1	2	3	4	5	6	7

2. Spends more hours per year training employees.	1	2	3	4	5	6	7
3. Presents training and development activities that are comprehensive.	1	2	3	4	5	6	7
4. Provides continuous developmental opportunities for customer contact personnel.	1	2	3	4	5	6	7
5. Offers many different types of training programs.	1	2	3	4	5	6	7

About the respondent:
Your title: _____
Number of years you have held this position: _____
Number of years you have been with your firm: _____
Number of years you have worked in the industry:_____

About the firm: *(Results from individual firms will not be identified. The name is only needed to send a copy of the findings back to you.)*
Firm name: _____
What is your firm's primary NAICS code (or primary industry of operation)? _____
Has your firm undergone a major reorganization in the past 2 years? Yes ___ No ___

APPENDIX C

RELIABILITY AND VALIDITY ANALYSIS

Scale Reliability: Knowledge flows (Vertical)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.914	.915	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KnowFlowQ1A_1	30.351	103.480	.611	.394	.910
KnowFlowQ1A_2	30.825	100.459	.700	.616	.904
KnowFlowQ1A_3	30.814	100.861	.707	.675	.904
KnowFlowQ1A_4	31.062	99.746	.787	.749	.899
KnowFlowQ1A_5	30.309	100.987	.676	.576	.906
KnowFlowQ1A_6	30.392	99.345	.781	.708	.899
KnowFlowQ1A_7	30.227	100.448	.658	.588	.908
KnowFlowQ1A_8	30.814	100.694	.706	.631	.904
KnowFlowQ1A_9	30.505	101.211	.690	.648	.905

Scale Reliability: Knowledge flows (Horizontal)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.891	.893	9

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
KnowFlowQ1B_1	30.732	92.011	.434	.273	.895
KnowFlowQ1B_2	31.124	89.276	.560	.416	.885
KnowFlowQ1B_3	31.381	84.426	.692	.721	.875
KnowFlowQ1B_4	31.464	83.272	.697	.754	.874
KnowFlowQ1B_5	31.577	82.892	.668	.613	.877
KnowFlowQ1B_6	31.887	90.289	.518	.482	.889
KnowFlowQ1B_7	31.474	85.252	.762	.707	.870
KnowFlowQ1B_8	30.938	83.954	.794	.752	.867
KnowFlowQ1B_9	31.237	86.454	.737	.657	.872

Scale Reliability: Innovation (Service)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.939	.940	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Innovation_Q3A_1	21.835	55.139	.799	.749	.930
Innovation_Q3A_2	21.784	54.651	.836	.801	.926
Innovation_Q3A_3	22.072	54.693	.772	.694	.934
Innovation_Q3A_4	22.309	52.674	.851	.795	.924
Innovation_Q3A_5	21.979	54.791	.866	.778	.923
Innovation_Q3A_6	21.825	54.021	.793	.691	.931

Scale Reliability: Innovation (Delivery)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.932	.932	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Innovation_Q3B_1	25.299	55.212	.773	.820	.922
Innovation_Q3B_2	25.515	54.982	.760	.819	.923
Innovation_Q3B_3	25.856	55.125	.714	.573	.928
Innovation_Q3B_4	25.588	53.641	.870	.796	.913
Innovation_Q3B_5	25.660	53.477	.856	.802	.914
Innovation_Q3B_6	25.701	55.337	.728	.746	.926
Innovation_Q3B_7	25.639	55.316	.773	.782	.922

Scale Reliability: Autonomy

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.934	.936	7

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
EmpAuto_Q2_1	27.876	66.193	.714	.602	.930
EmpAuto_Q2_2	28.402	61.118	.837	.766	.919
EmpAuto_Q2_3	28.464	62.189	.819	.708	.921
EmpAuto_Q2_4	28.629	61.402	.786	.727	.924
EmpAuto_Q2_5	28.526	61.544	.869	.815	.916
EmpAuto_Q2_6	28.619	60.655	.838	.757	.919
EmpAuto_Q2_7	29.773	62.511	.668	.519	.937

Scale Reliability: Customer Contact

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.939	.939	10

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
CustContact_Q4_1	41.866	135.409	.664	.555	.936
CustContact_Q4_2	41.918	136.472	.645	.612	.937
CustContact_Q4_6	42.598	128.243	.801	.782	.930
CustContact_Q4_7	42.526	128.169	.832	.794	.928
CustContact_Q4_8	42.320	130.345	.786	.685	.930
CustContact_Q4_9	41.825	136.229	.769	.717	.932
CustContact_Q4_11	42.247	134.626	.707	.512	.934
CustContact_Q4_12	42.351	128.272	.820	.767	.929
CustContact_Q4_13	42.918	131.243	.723	.673	.934
CustContact_Q4_14	42.804	128.909	.775	.732	.931

Scale Reliability: Human Capital (CCP skill level)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.930	.930	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
HR_Q5A_1	29.680	89.907	.706	.814	.924
HR_Q5A_2	29.907	89.106	.763	.785	.920
HR_Q5A_3	29.639	85.441	.788	.653	.918
HR_Q5A_4	29.557	88.854	.757	.731	.920
HR_Q5A_5	29.742	92.339	.718	.759	.923
HR_Q5A_6	29.763	92.016	.686	.790	.926
HR_Q5A_7	29.660	87.831	.772	.696	.919
HR_Q5A_8	29.546	85.730	.877	.811	.911

Scale Reliability: Human Capital (CCP training)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.929	.929	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
HR_Q5B_1	16.948	30.841	.819	.774	.911
HR_2	16.825	30.438	.843	.800	.907
HR_3	16.567	30.394	.817	.690	.912
HR_4	16.402	30.951	.825	.716	.910
HR_5	16.433	31.061	.759	.616	.923

Factor Analysis: Knowledge flows (Vertical)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.370	59.666	59.666	5.370	59.666	59.666
2	1.010	11.225	70.890			
3	.709	7.878	78.769			
4	.527	5.857	84.626			
5	.445	4.950	89.576			
6	.350	3.888	93.464			
7	.228	2.532	95.996			
8	.182	2.025	98.021			
9	.178	1.979	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
KnowFlowQ1A_1	.688
KnowFlowQ1A_2	.774
KnowFlowQ1A_3	.782
KnowFlowQ1A_4	.846
KnowFlowQ1A_5	.752
KnowFlowQ1A_6	.839
KnowFlowQ1A_7	.729
KnowFlowQ1A_8	.774
KnowFlowQ1A_9	.755

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Knowledge flows (Horizontal)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.929	54.768	54.768	4.929	54.768	54.768
2	1.095	12.170	66.938			
3	.851	9.450	76.388			
4	.674	7.488	83.876			
5	.498	5.530	89.406			
6	.345	3.837	93.243			
7	.293	3.254	96.498			
8	.196	2.181	98.678			
9	.119	1.322	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
KnowFlowQ1B_1	.528
KnowFlowQ1B_2	.653
KnowFlowQ1B_3	.771
KnowFlowQ1B_4	.774
KnowFlowQ1B_5	.745
KnowFlowQ1B_6	.616
KnowFlowQ1B_7	.834
KnowFlowQ1B_8	.860
KnowFlowQ1B_9	.812

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Innovation (Service)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.621	77.011	77.011	4.621	77.011	77.011
2	.503	8.380	85.392			
3	.400	6.671	92.063			
4	.206	3.429	95.492			
5	.161	2.682	98.173			
6	.110	1.827	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Innovation_Q3A_1	.864
Innovation_Q3A_2	.892
Innovation_Q3A_3	.839
Innovation_Q3A_4	.899
Innovation_Q3A_5	.912
Innovation_Q3A_6	.858

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Innovation (Delivery)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.990	71.288	71.288	4.990	71.288	71.288
2	.913	13.042	84.330			
3	.435	6.217	90.548			
4	.288	4.114	94.662			
5	.145	2.066	96.728			
6	.133	1.896	98.624			
7	.096	1.376	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Innovation_Q3B_1	.835
Innovation_Q3B_2	.826
Innovation_Q3B_3	.788
Innovation_Q3B_4	.911
Innovation_Q3B_5	.903
Innovation_Q3B_6	.803
Innovation_Q3B_7	.837

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Employee Autonomy

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.068	72.405	72.405	5.068	72.405	72.405
2	.613	8.751	81.156			
3	.444	6.336	87.492			
4	.327	4.673	92.165			
5	.267	3.809	95.974			
6	.164	2.341	98.316			
7	.118	1.684	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
EmpAuto_Q2_1	.793
EmpAuto_Q2_2	.889
EmpAuto_Q2_3	.874
EmpAuto_Q2_4	.845
EmpAuto_Q2_5	.910
EmpAuto_Q2_6	.888
EmpAuto_Q2_7	.744

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.934	.936	7

Factor Analysis: Customer Contact

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.475	64.751	64.751	6.475	64.751	64.751
2	.952	9.516	74.266			
3	.513	5.131	79.398			
4	.477	4.772	84.170			
5	.411	4.113	88.283			
6	.373	3.733	92.016			
7	.261	2.612	94.628			
8	.258	2.583	97.210			
9	.185	1.850	99.060			
10	.094	.940	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
CustContact_Q4_1	.725
CustContact_Q4_2	.711
CustContact_Q4_6	.847
CustContact_Q4_7	.869
CustContact_Q4_8	.834
CustContact_Q4_9	.818
CustContact_Q4_11	.762
CustContact_Q4_12	.863
CustContact_Q4_13	.777
CustContact_Q4_14	.823

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Human Capital (CCP skill level)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.379	67.232	67.232	5.379	67.232	67.232
2	1.220	15.244	82.476			
3	.436	5.451	87.927			
4	.323	4.031	91.959			
5	.256	3.206	95.164			
6	.149	1.863	97.028			
7	.134	1.675	98.702			
8	.104	1.298	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
HR_Q5A_1	.775
HR_Q5A_2	.820
HR_Q5A_3	.846
HR_Q5A_4	.816
HR_Q5A_5	.785
HR_Q5A_6	.763
HR_Q5A_7	.833
HR_Q5A_8	.913

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Factor Analysis: Human Capital (CCP training)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.897	77.944	77.944	3.897	77.944	77.944
2	.471	9.426	87.370			
3	.312	6.244	93.614			
4	.195	3.907	97.521			
5	.124	2.479	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
HR_Q5B_1	.889
HR_2	.905
HR_3	.887
HR_4	.889
HR_5	.844

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

APPENDIX D

FINAL SURVEY QUESTIONS USED

Employee Autonomy

1. CCPs are encouraged to take the initiative when serving customers.
2. CCPs are encouraged to "think outside of the box" when serving customers.
3. CCPs are trusted to do their work the way they think is best when serving customers.
4. CCPs do not need to get management's approval before they handle customer problems.
5. CCPs can use their own judgment to solve problems for customers.
6. CCPs can be creative when addressing customers' particular needs.
7. CCPs are allowed to significantly alter the service without needing management's approval.

Customer Contact

1. Employees spend a lot of time in communication with customers during the service.
2. Employees are very quick responding back to customers' questions and needs.
3. Employees partner with customers to develop solutions during the service.
4. Employees include customers in the service process to affect the quality of the service.
5. Employees need to continuously cooperate with customers in order to provide the service.
6. Customers feel comfortable trusting and confiding with our employees during the service.
7. Customers provide suggestions to our employees for improving the service outcome.
8. Customers have a high level of participation in the service process.
9. Customers are very involved in deciding how the services should be provided.
10. Customers jointly decide with our employees on the outcome of the service.

APPENDIX E

RESULTS FOR HYPOTHESIS 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.460[a]	.212	.203	1.11844	.212	25.517	1	95	.000

a. Predictors: (Constant), ccs

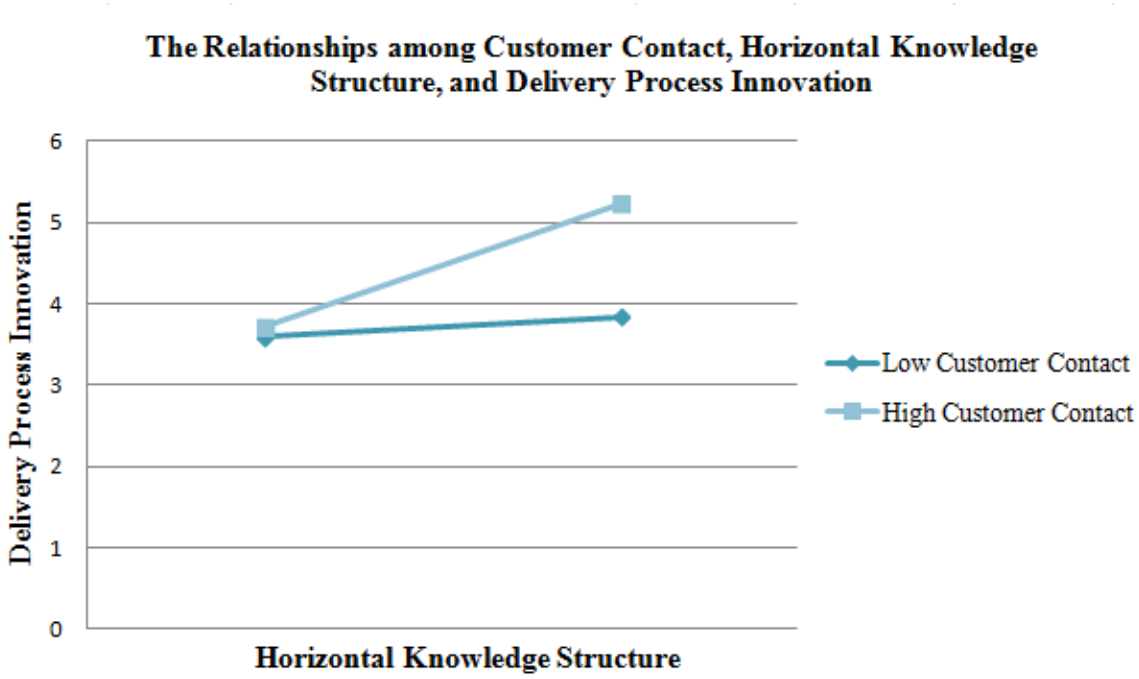
Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.192	.437		5.012	.000		
	ccs	.454	.090	.460	5.051	.000	1.000	1.000

a. Dependent Variable: totalinno

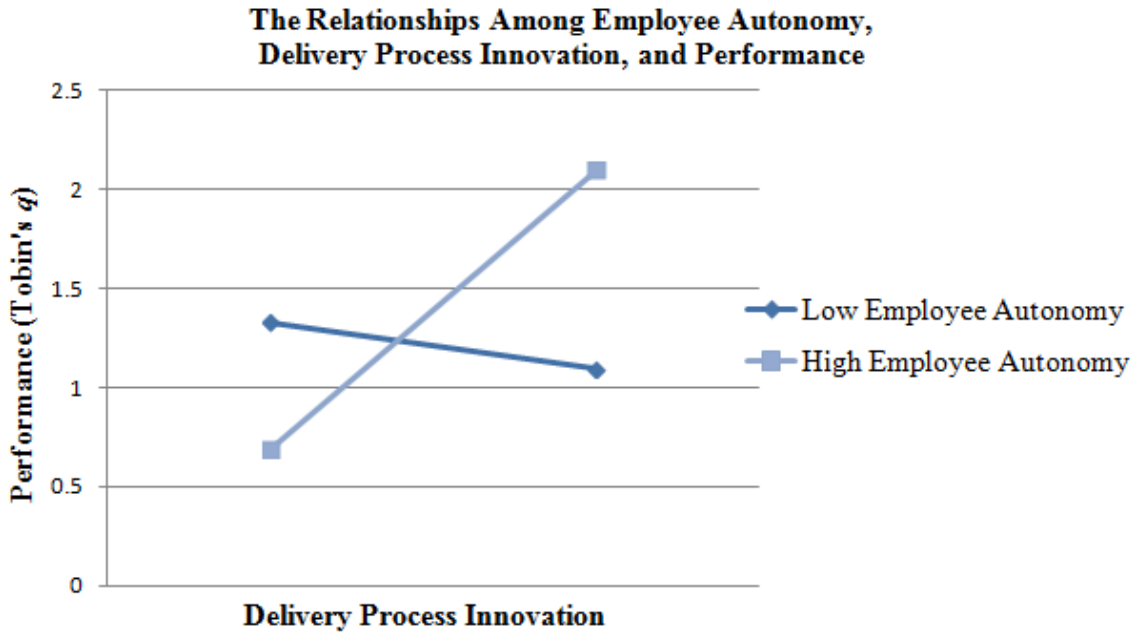
APPENDIX F

INTERACTION PLOT, CUSTOMER CONTACT X HORIZONTAL KNOWLEDGE STRUCTURE AND DELIVERY PROCESS INNOVATION



APPENDIX G

INTERACTION PLOT, EMPLOYEE AUTONOMY X DELIVERY PROCESS INNOVATION AND PERFORMANCE (TOBIN'S *q*)



BIBLIOGRAPHY

Aboulnasr, K., Narasimhan, 0., Blair, E. & Chandy, R. (2008). Competitive response to radical product introductions. Journal of Marketing, 72, 94-110.

Acs, Z., & Preston, L. (1997). Small and medium-sized enterprises, technology, and globalization: Introduction to a special issue on small and medium-sized enterprises in the global economy. Small Business Economics, 9, 1-6.

Alam, I. (2002). An exploratory investigation of user involvement in new service development. Journal of the Academy of Marketing Science, 30(3), 250-261.

Alam, I. (2006). Service innovation strategy and process: a cross-national comparative analysis. International Marketing Review, 23(3), 234-254.

Aldrich, H., & Herker, D. (1979). Boundary-spanning roles and organizational structure. Academy of Management Review, 2, 217-230.

Almeida, R. & Fernandes, A. (2008). Openness and technological innovations in developing countries: Evidence from firm-level surveys. Journal of Development Studies, 44(5), 701-727.

Amit, R., & Livnat, J. (1989). Efficient corporate diversification: Methods and implications. Management Science, 35, 879-897.

Andreou, E., Alexopoulos, E. C., Lionis, C., Varvogli, L., Gnardellis, C., Chrousos, G., & Darviri, C. (2011). Perceived stress scale: Reliability and validity study in Greece. International Journal of Environmental Research and Public Health, 8, 3287-3298.

Aoki, M. 1986. Horizontal vs. vertical information structure of the firm. The American Economic Review, 76(5), 971-983.

Aranda, D. (2002). Relationship between operations strategy and size in engineering consulting firms. International Journal of Service Industry Management, 13(3), 263-285.

Arcelus, F.J., Mitra, D., & Srinivasan, G. 2005. On the incidence of deferred taxes, intangibles and non-linearities in the relationship between Tobin's Q and ROI. Journal of Economics and Business, 57, 165–185.

Avlontis, G., Papastathopoulou, P., & Gounaris, S. (2001). An empirically-based typology of product innovativeness for new financial services: Success and failure scenario. Journal of Product Innovation Management, (18)5, 324-42.

Babbar, S., & Koufteros, X. (2008). The human element in airline service quality: Contact personnel and the customer. International Journal of Operations & Production Management, 28(9), 804-830.

Banerjee, M., Capozzoli, M., McSweeney, L. & Sinha, D. (1999). Beyond kappa: A review of inter-rater agreement measures. Canadian Journal of Statistics, 27(1), 3-23.

Bantel, K., & Jackson, S. (1989). Top management and innovations in banking: Does the composition of the top team make a difference? Strategic Management Journal, 10, 107-124.

Baschab, J., & Piot, J. (2005). The professional services firm bible. Hoboken, New Jersey: John Wiley & Sons, Inc.

Bateson, J. (2002). Are your customers good enough for your service business? Academy of Management Executive, 16(4),110-120.

Bateson, J. (1985). Perceived control and the service encounter. In Czepiel, J., Solomon, M., & Surprenant, C. The service encounter: Managing employee/customer interaction in service businesses (pp. 67-82). Lexington, MA: D. C. Heath and Company.

Bearden, W., Malhotra, M., & Uscátegui, H. (1998). Customer contact and the evaluation of service experiences: Propositions and implications for the design of services. Psychology & Marketing, 15(8), 793-809.

Becker, G. S. (1993). Human capital. Chicago, IL: The University of Chicago Press.

Berry, L. (1980). Services marketing is different. Business, 20, 24-29.

Berry, L. (2000). Cultivating service brand equity. Journal of the Academy of Marketing Science, 28(1), 128-137.

Bettencourt, L., & Brown, S. (2003). Role stressors and customer-oriented boundary-spanning behaviors in service organizations. Journal of the Academy of Marketing Science, 31(4), 394-408.

Bharadwaj, A., Bharadwaj, S., & Konsynski, B. (1999). Information technology effects on firm performance as measured by tobin's q. Management Science, 45(6), 1008-1024.

Bharadwaj, S., & Menon, A. (1993). Determinants of success in service industries: A PIMS-based. The Journal of Services Marketing, 7(4), 19-23.

Birasnav, M., & Rangnekar, S. (2010). Knowledge management structure and human capital development in Indian manufacturing industries. Business Process Management Journal, 16(1), 57-75.

Bitner, M. (1990). Evaluating service encounters: The effects of physical surroundings and employee responses. Journal of Marketing, 54, 69-82.

Bitner, M. (1992). Servicescape: The impact of physical surroundings on customers and employees. Journal of Marketing, 56, 57-71.

Bitner, M., Booms, B., & Mohr, L. (1994). Critical service encounters: The employee's viewpoint. Journal of Marketing, 58, 95-106.

Boasson, V. & Boasson, E. (2006). The stock market valuation of IT innovations: Evidence from the investment banking industry. Information Systems Education Journal, 4(42), 2-8.

Bontis, N., Fearson, M. & Hishon, M. (2003). The e-flow audit: An evaluation of knowledge flow within and outside a high-tech firm. Journal of Knowledge Management, 7(1), 6-20.

Bowen, D., & Schneider, B. (1985). Boundary spanning role employees and the service encounter: Some guidelines for management research. In Czepiel, J., Soloman, M. & Surprenan, C. The service encounter (pp. 127-147). Lexington, MA: Lexington Books.

Bowen, D., Siehl, C., & Schneider, B. (1989). A framework for analyzing customer service orientations in manufacturing. Academy of Management Review, 14, 75-95.

Bowen, D., & Youngdahl, W. (1998). "Lean" service: In defense of a production-line approach. International Journal of Service Industry Management, 9(3), 207-225.

Boyd, B. (1990). Corporate linkages and organizational environments: A test of the resource dependence model. Strategic Management Journal, 11, 419-430.

Boyd, B., Dess, G., & Rasheed, A. (1993). Divergence between archival and perceptual measures of the environment: Causes and consequences. Academy of Management Review, 18(2), 204-226.

Boxall, P. & Purcell, J. (2008). Strategy and human resource management (second edition). New York: Palgrave Macmillan.

Brachos, D., Kostopoulos, K., Soderquist, K., & Prastacos, G. (2007). Knowledge effectiveness, social context and innovation. Journal of Knowledge Management, 11(5), 31-44.

Bradburn, N. M. (1992). Presidential address: A response to the nonresponse problem. Public Opinion Quarterly, 56(3), 391-397.

Bradburn, N., Sudman, S., & Wansink, B. (2004). Asking questions: The definitive guide to questionnaire design. San Francisco: Jossey-Bass.

Brealey, R., & Myers, S. (1996). Principles of corporate finance. New York: McGraw-Hill.

Burton, L. J., & Mazerolle, S. M. (2011). Survey Instrument Validity Part I: Principles of Survey Instrument Development and Validation in Athletic Training Education Research. Athletic Training Education Journal, 6(1), 27-35.

Candi, M. (2010). Benefits of aesthetic design as an element of new service development. Journal of Product Innovation Management, 27(7), 1047-1064.

Chan, K. W., Yim, C. K., & Lam S. K. (2010). Is customer participation in value creation a double-edged sword? Journal of Marketing, 74(3), 48-64.

Channon, D. F. (1978). The service industries: Strategy, structure and financial performance. London: Macmillan.

Chase, R. (1978). Where does the customer fit in the service operation? Harvard Business Review, 56(6), 137-142.

Chase, R. (1981). The customer contact approach to services: Theoretical bases and practical extensions. Operations Research, 29(4), 698-706.

Chase, R., & Garvin, D. A. (1989). The service factory. Harvard Business Review, 57(4), 61-69.

Chase, R., Northcraft, G., & Wolf, G. (1984). Designing high-contact service systems: Application to branches of a savings and loan. Decision Sciences, 15(4), 542-556.

Chase, R., & Tansik, D. (1983). The customer contact model of organization design. Management Science, 29(9), 1037-1050.

Chakravarthy, B. (1986). Measuring strategic performance. Strategic Management Journal, 7(5), 437-458.

Chen, K., & Lee, C.W.J. (1995). Accounting measures of business performance and Tobin's q theory. Journal of Accounting, Auditing & Finance, 10(3) 587-609.

Choi, S., Leiter, J., & Tomaskovic-Devey, D. (2008). Contingent autonomy: Technology, bureaucracy, and relative power in the labor process. Work and Occupations, 35(4): 422-455.

Chung, K., & Pruitt, S. (1994). A simple approximation of Tobin's q. Financial Management, 23(Autumn), 70-74.

Cohen, W., & Klepper, S. (1996). Firm size and the nature of innovation within industries: The case of process and product R&D. Review of Economics and Statistics, 78(2), 232-243.

Cohen, W., & Levinthal, D. (1990). Absorptive capacity: A new perspective on learning and innovation. Administrative Science Quarterly, 35(1), 128-152.

Conley, S., Muncey, D., & You, S. (2006). Standards-based evaluation and teacher career satisfaction: A structural equation modeling analysis. Journal of Personnel Evaluation in Education, 18, 39-65.

Connolly, P., & Connolly, K. (2003). Employee survey question guidebook. Old Saybrook, CT: Performance Programs.

Cook, D., Goh, C., & Chung, C. (1999). Service typologies: A state-of-the-art survey. Production and Operations Management, 8(3), 318-338.

Covin, J., & Slevin, D. (1989). Strategic management of small firms in hostile and benign environments. Strategic Management Journal, 10, 75-87.

Daft, R. L. (2001). Organization theory and design (7th ed). Cincinnati, OH: South-Western Publishing.

Damanpour , F. (1991). Organizational innovation: A meta-analysis of effects of determinants. Academy of Management Journal, 34, 555-590.

Darr, E., Argote, L., & Epple, D. (1995). The acquisition, transfer and depreciation of knowledge in service organizations: Productivity in franchises. Management Science, 41, 1750-1762.

Day, G. (1994). The capabilities of market-driven organizations. Journal of Marketing, 58(4), 37-52.

Day, S., & Wensley, R. (1988). Assessing advantage: A framework for diagnosing competitive superiority. Journal of Marketing, 52, 1-20.

Debackere, K., Van Looy, B., & Papastathopoulou, P. (1998). Managing innovation in a service environment. In Van Dierdonck, R., Van Looy, B., & Gemmel, P. Service management: An integrated approach (pp. 387-405). London: Pitman Publishing.

de Brentani, U. (1989). Success and failure in new industrial services. Journal of Product Innovation Management, 6, 239-258.

Delaney, J. T., & Huselid, M. A. (1996). The impact of human resource management practices on perceptions of organizational performance. Academy of Management Journal, 39(4), 949-969.

den Hertog, P. (2000). Knowledge-intensive business services as co-producers of innovation. International Journal of Innovation Management, 4(4), 491-528.

Dess, G., & Beard, D. (1984). Dimensions of organizational task environments. Administrative Science Quarterly, 29(1), 52-73.

Dess, G., & Robinson, R. (1984). Measuring organizational performance in the absence of objective measures: The case of the privately held firm and conglomerate business unit. Strategic Management Journal, 5, 265-273.

Dewar, R., & Dutton, J. (1986). The adoption of radical and incremental innovations: An empirical analysis. Management Science, 32(11), 1422-1433.

Dhar, U., & Mishra, P. (2001). Leadership effectiveness: A study of constituent factors. Journal of Management Research. 1(4), 254-266.

Dyreng, S., Hanlon, M., & Maydew, E. (2010). The effects of managers on corporate tax avoidance. The Accounting Review, 85(4), 1163-1189.

Dubofsky, P., & Varadarajan, P. (1987). Diversification and measures of performance: Additional empirical evidence. Academy of Management Journal, 32, 597-608.

Du Plessis, M. (2007). The role of knowledge management in innovation. Journal of Knowledge Management, 11(4), 20-29.

Ellinger, A. E., Keller, S., & Bas, A. (2010). The empowerment of frontline service staff in 3PL companies. Journal of Business Logistics, 31(1): 79-98.

Emery, C., & Barker, K. (2007). The effect of transactional and transformational leadership styles on the organizational commitment and job satisfaction of customer contact personnel. Journal of Organizational Culture, Communication and Conflict, 11(1), 77-90.

Fang, E., Palmatier, R., & Grewal, R. (2011). Effects of customer and innovation asset configuration strategies on firm performance. Journal of Marketing Research, forthcoming.

Fisher, F., & McGowan, J. (1983). On the misuse of accounting rates of return to infer monopoly profits. American Economic Review, 73, 82-97.

Fitzsimmons, J., & Fitzsimmons, M. (1998). Service management: Operations, strategy, and information technology. New York, NY: McGraw-Hill.

Flint, D., Larsson, E., Gammelgaard, B., & Mentzer, J. (2005). Logistics innovation: A customer value-oriented social process. Journal of Business Logistics, 26(1), 113-148.

Floyd S., & Wooldridge, B. (1992). Middle management involvement in strategy. Strategic Management Journal, 13, 153–67.

Friedman, B. M. (1985). Corporate capital structures in the United States. Chicago: University of Chicago Press.

Froehle, C. (2006). Service personnel, technology, and their interaction in influencing customer satisfaction. Decision Sciences, 37(1), 5-38.

Fuchs, V. (1968). The service economy. Press for the National Bureau of Economic Research. New York, NY: Columbia University.

Fuglsang, L., Sundbo, J., & Sorensen, F. (2011). Dynamics of experience service innovation: Innovation as a guided activity - results from a Danish survey. The Service Industries Journal, 31(5), 661-677.

Gadrey, J., Gallouj, F., & Weinstein, O. (1995). New modes of innovation: How services benefit industry. International Journal of Services Industry Management, 6(3), 4-16.

Gago, D., & Rubalcaba, L. (2007). Innovation and ICT in service firms: Towards a multidimensional approach for impact assessment. Journal of Evolutionary Economics, 17(1), 25-44.

Gallouj, F. (2002). Innovation in services and the attendant old and new myths. The Journal of Socio-Economics, 31, 137-154.

Gebauer, H., Krempl, R., Fleisch, E., & Friedli, T. (2008). Innovation of product-related services. Managing Service Quality, 18(4), 387-404.

Gebert, H., Geib, M., Kolbe, L., & Brenner, W. (2003). Knowledge-enabled customer relationship management: Integrating customer relationship management and knowledge management concepts. Journal of Knowledge Management, 7(5), 107-123.

Gibbert, M., Leibold, M., & Probst, G. (2002). Five styles of customer knowledge management and how smart companies use them to create value. European Management Journal, 20(5), 459-469.

Goh, S. C. (2002). Managing effective knowledge transfer: An integrative framework and some practice implications. Journal of Knowledge Management, 6(1), 23-30.

Gordon, G., Kaminski, P., Calantone, R., & di Benedetto, C. (1993). Linking customer knowledge with successful service innovation. Journal of Applied Business Research, 9(2), 129-140.

Griffin, A., & Hauser, J. R. (1993). The voice of the customer. Marketing Science, 12(1), 1-27.

Gruner, K., & Homburg, C. (2000). Does customer interaction enhance new product success? Journal of Business Research, 49(1), 1-14.

Guenzi, P., & Pelloni, O. (2004). The impact of interpersonal relationships on customer satisfaction and loyalty to the service provider. International Journal of Service Industry Management, 15(4), 365-384.

Gupta, A., & Govindarajan, V. (1991). Knowledge flows and the structure of control within multinational corporations. Academy of Management Review, 16(4), 768-792.

Gupta, A., & Govindarajan, V. (1994). Organizing for knowledge flows within MNCs. International Business Review, 3, 443-457.

Gupta, A., & Govindarajan, V. (2000). Knowledge flows within multinational corporations. Strategic Management Journal, 21, 473–496.

Hage, J. (1980). Theories of organization. New York: Wiley Interscience.

Hair, Jr., J., Black, W., Babin, B., & Anderson, R.E. (1995). Multivariate data analysis. Englewood Cliffs, New Jersey: Prentice-Hall.

Hambrick, D. & Mason, P. (1984). Upper echelons: The organization as a reflection of its top managers. Academy of Management Review, 193-206.

Hartline, M., & Ferrell, O. (1996). The management of customer-contact service employees: An empirical investigation. Journal of Marketing, 60(4), 52-71.

Harvey, J. (1998). Service quality: A tutorial. Journal of Operations Management, 16(5), 583-597.

Haynes, P. and Fryer, G. (2000). Human resources, service quality and performance: A case study. International Journal of Contemporary Hospitality Management, 12 (4), 240-48.

Henderson, R., & Clark, K. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. Administrative Science Quarterly, 35(1), 9-30.

Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. Strategic Management Journal, 15, 63-84.

Hendricks, K., & Singhal, V. (1997). Delays in new product introductions and the market value of the firm: The consequences of being late to the market. Management Science, 43(4), 422-436.

Herkema, S. (2003). A complex adaptive perspective on learning within innovation projects. The Learning Organization, 10(6), 340-346.

Heskett, J., Sasser, W., & Hart, C. (1990). Service breakthroughs. New York: The Free Press.

Hipp, C., Thether, B. S. & Miles, I. (2000). The incidence and effects of innovation in services: evidence from Germany. International Journal of Innovation Management, 4(4): 417-453.

Hitt, M. A., & Ireland, R. D. (1985). Corporate distinctive competence, strategy, industry and performance. Strategic Management Journal, 6(3), 273-293.

Hitt, M. A., Bierman, L., Shimizu, K. & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and firm performance in professional service firms: A resource-based perspective. Academy of Management Journal, 44: 13-28.

Hitt, M. A., Bierman, L., Uhlenbruck, K., & Shimizu, K. (2006). The importance of resources in the internationalization of professional service firms: The good, the bad, and the ugly. The Academy of Management Journal. 49(6), 1137-1157.

Hodson, R. & Sullivan, T.A. (2008). The social organization of work. Belmont, CA: Thomson Wadsworth.

Huang, W. (2008). The impact of other-customer failure on service satisfaction. International Journal of Service Industry Management, 19(4), 521-536.

Huber, G. P. (1991). Organizational learning: The contributing processes and the literatures. Organization Science, 2, 88-115.

Huber, G. P., & Power, D. J. (1985). Retrospective reports of strategic-level managers: Guidelines for increasing their accuracy. Strategic Management Journal, 6(2), 171-180.

Huffman, T., & Skaggs, B. (2010). The effects of customer-firm interaction on innovation and performance in service firms. Journal of Business Strategies, 27(2), 151-176.

Hunt, S., & Morgan, R. (1995). The comparative advantage theory of competition. Journal of Marketing, 59(2), 1-15.

Johne, A., & Storey, C. (1998). New service development: A review of the literature and annotated bibliography. European Journal of Marketing, 32 (3/4), 184-251.

Jones, G. R. (1990). Governing customer-service organization exchange. Journal of Business Research, 20, 23-29.

Junarsin, E. (2010). Issues in the innovation service product process: A managerial perspective. International Journal of Management, 27(3), 616-329.

Kakavelakis, K. (2010). Family-themed control in service factories: An examination of modes of service delivery and HRM styles in the UK restaurant sector. Personnel Review, 39(5), 557-573.

Kaplan, R., & Norton, D. P. (1996). The balanced scorecard. Boston, MA: Harvard Business School Press.

Kellogg, D. (2000). A customer contact measurement model: An extension. International Journal of Service Industry Management, 11(1), 26-45.

Kellogg, D., & Chase, R. (1995). Constructing an empirically derived measure for customer contact. Management Science, 41(11), 1734-1749.

Kerlinger, F. N., & Lee, H. B. (1999). Foundations of behavioral research. New York, NY: Wadsworth Publishing.

Klein, J. A. (1991). A reexamination of autonomy in light of new manufacturing practices. Human Relations, 44, 21-38.

Klein, J. A. (1994). The paradox of quality management: Commitment, ownership, and control. In Heckscher, C., & Donnellon, A. The post-bureaucratic organization: New perspectives on organizational change (pp. 178-194). Thousand Oaks, CA: Sage.

Kline, P. A. (2000). A psychometrics primer. London, UK: Free Association Books.

Kumar, J., & Ganesh, L. (2009). Research on knowledge transfer in organizations: A morphology. Journal of Knowledge Management, 13(4), 161-174.

Kuratko, D., Ireland, R., & Hornsby, J. (2001). Improving firm performance through entrepreneurial actions: Acordia's corporate entrepreneurship strategy. The Academy of Management Executive, 15(4), 60-72.

Landsman, W., & Shapiro, A. (1995). Tobin's q and the relation between accounting ROI and economic return. Journal of Accounting, Auditing & Finance, 10(1), 103-120.

Leonard, D., & Rayport, J. (1997). Spark innovation through empathic design. Harvard Business Review, 75(6), 102-113.

Lepak, D. P. & Snell, S. A. 1999. The human resource architecture: Toward a theory of human capital allocation and development. Academy of Management Review, 24: 31-48.

Lewis, M. (2000). Exploring paradox: Toward a more comprehensive guide. The Academy of Management Review, 25(4), 760-777.

Lievens, A., Moenaert, R., & Jegers, R. (1999). Linking communication to innovation success in the financial services industry: A case study analysis. International Journal of Service Industry Management, 10(1), 23-47.

Lilien, G., Morrison, P., Searls, K., Sonnack, M. & von Hippel, E. (2002). Performance assessment of the lead user idea-generation process for new product development. Management Science, 48(8), 1042-1060.

Lin, H., & Lin, E. (2010). FDI, trade, and product innovation: Theory and evidence. Southern Economic Journal, 77(2), 434-465.

Lin, C., Lin, P., Song, F., & Li, C. (2009). Managerial incentives, CEO characteristics and corporate innovation in China's private sector. Journal of Comparative Economics, 1, 1-15.

Lovelock, C. (1981). Why marketing management needs to be different for services. In Donnelly, J., & George, W. Marketing of services (pp. 5-9). Chicago, IL: American Marketing Association.

Lovelock, C. (1984). Developing and implementing new services. In George, W., & Marshall, C. Developing new services (pp. 44-64). Chicago, IL: American Marketing Association.

Lusch, R., & Vargo, S. (2006). The service-dominant logic of marketing: dialog, debate, and directions. New York: M.E. Sharpe.

Macky, K., & Boxall, P. (2008). Employee experiences of high-performance work systems: An analysis of sectoral, occupational, organisational and employee variables. Journal of Employment Relations, 33(1), 1-18.

Maister, D., & Lovelock, C. (1982). Managing facilitator services. Sloan Management Review, 23(4), 19-31.

Magnusson, P. (2003). Benefits of involving users in service innovation. European Journal of Innovation Management. 6(4), 228-239.

Mansury, M. A., & Love, J. H. (2008). Innovation, productivity and growth in US business services: A firm-level analysis. Technovation, 28, 52-62.

Matusik, S. & Hill, C. (1998). The utilization of contingent work, knowledge creation, and competitive advantage. Academy of Management Review, 23(4), 680-698.

McNulty, T. & Ferlie, E. (2004). Process transformation: Limitations to radical organisational change within public service organisations. Organisation Studies, 25(8), 1389-1412.

Mefford, R. (1991). Quality and productivity: The linkage. International Journal of Production Economics, 24(1/2), 137-145.

Melton, H., & Hartline, M. (2010). Customer and frontline employee influence on new service development performance. Journal of Service Research, 13(4), 411-425.

Miller, D. (1983). Correlates of entrepreneurship in three types of firms. Management Science, 29, 770-991

Miller, D. (1991). Stale in the saddle: CEO tenure and the match between organization and environment. Management Science, 37(1), 34-52.

Miller, D., Fern, M., & Cardinal, L. (2007). The use of knowledge for technologe for technological innovation within diversified firms. Academy of Management Journal, 50(2), 308-326.

Miller, D., & Friesen, P. (1978). Archetypes of strategy formulation. Management Science, 24, 921-933.

Mills, P. (1986). Managing service industries: Organizational practices in a postindustrial economy. Cambridge, MA: Ballinger.

Mills P., Hall J., Leidecker J., & Margulies N. (1983). Flexiform: A model of professional service organizations. Academy of Management Review, 8, 118-131.

Mills, P., & Moberg, D. (1982). Perspectives on the technology of service operations. Academy of Management Review, 7(3), 467-478.

Mills, P., & Morris, J. (1986). Clients as "partial" employees of service organizations: Role development in client participation. Academy of Management Review, 11(4), 726-735.

Mills, P., & Morris, J. (1992). Some moderating effects of client-intervention need on perceived technology and structure in service providers' tasks. International Journal of Service Industry Management, 3(1), 4-13.

Mills, P., & Posner, B. (1982). The relationships among self-supervision, structure, and technology in professional service organizations. Academy of Management Journal, 25(2), 437-443.

Modi, S., & Mabert, V. (2010). Exploring the relationship between efficient supply chain management and firm innovation: An archival search and analysis. Journal of Supply Chain Management, 46(4), 81-95.

Mom, T., van den Bosch, F., & Volberda, H. (2007). Investigating managers´ exploration and exploitation activities: The influence of top down, bottom up, and horizontal knowledge inflows. Journal of Management Studies, 44(6), 910-931.

Monteiro, L., Arvidsson, N., & Birkinshaw, J. (2008). Knowledge flows within multinational corporations: Explaining subsidiary isolation and its performance implications. Organization Science, 19(1), 90-107.

Montgomery, C., & Wemerfelt, B. (1988). Diversification, ricardian rents, and tobin's q. Rand Journal of Economics, 19(Winter), 623-632.

Moosa, N., & Panurach, P. (2008). Encouraging front-line employees to rise to the innovation challenge. Strategy & Leadership, 36(4), 4-9.

Mu, J., Love, E., & Peng, G. 2008. Interfirm networks, social capital, and knowledge flow. Journal of Knowledge Management, 12(4), 86-100.

Nayyar, P. (1992). Performance effects of three foci in service firms. Academy of Management Journal, 35(5), 985-1009.

Newhouse, J.P. (1969). Multicollinearity and the astatistical power of regression analysis. Santa Monica, California: Rand Corporation.

Nguyen, N. (2010). Competence and benevolence of contact personnel in the perceived corporate reputation: An empirical study in financial services. Corporate Reputation Review, 12(4), 345-357.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. Organization Science, 5(1), 14-37.

Nonaka, I., & Takeuchi, H. (1995). The knowledge-creating company: How Japanese companies create the dynamics of innovation. New York, NY: Oxford University Press.

Nunnally, J. C. (1978). Psychometric theory. New York, NY: McGraw-Hill Book Company.

O'Brien, J. (2003). The capital structure implications of pursuing a strategy of innovation. Strategic Management Journal, 24(5), 415-431.

Ordonez de Pablos, P. (2004). Knowledge flow transfers in multinational corporations: Knowledge properties and implications for management. Journal of Knowledge Management, 8(6), 105-116.

Othman, A. (2011). Emotional intelligence and employees' innovator role: The moderating effect of service types. Asian Social Science, 7(10), 151-160.

Pappas, J., & Flaherty, K. (2007). The effect of trust on customer contact personnel strategic behavior and sales performance in a service environment. Journal of Business Research, 61, 894-902.

Parasuraman, A. (2010). Service productivity, quality and innovation: Implications for service-design practice and research. International Journal of Quality and Service Sciences, 2(3), 277-286.

Parasuraman, A., & Colby, C. L. (2000). Technology Readiness Index (TRI): A multiple-item scale to measure readiness to embrace new technologies. Journal of Service Research, 2(4), 307-320.

Parasuraman, P., Zeithaml, V. & Berry, L. (1991). Understanding customer expectations of service. Sloan Management Review, Spring, 39-48.

Parasuraman, P., Zeithaml, V., & Berry, L. (1985). A conceptual model of service quality and its implications for future research. Journal of Marketing, 49, 41-50.

Peck, S. (1998). No easy roads to employee involvement. The Academy of Management Executive, 12(3), 83-85.

Phellas, C.N., Bloch, A., & Seale, C. (2011). Structured methods: Interviews, questionnaires and observation. In Seale, C. Researching society and culture. (pp. 181-205). England: Sage.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. Journal of Applied Psychology, 88(5), 879-903.

Podsakoff, P.M. & Organ, D.W. (1986). Self-reports in organizational research: Problems and prospects. Journal of Management, 12(4), 531-544.

Podsakoff, P.M., Todor, W.D., Grover, R.A., & Huber, V.L. (1984). Situational moderators of leader reward and punishment behaviors: Fact or fiction? Organizational Behavior and Human Performance, 34, 21-63.

Reynolds, K., & Beatty, S. (1999). Customer benefits and company consequences of customer-salesperson relationships in retailing. Journal of Retailing, 75(1), 11-31.

Rothaermel, F. T. (2001). Incumbent's advantage through exploiting complementary assets via interfirm cooperation. Strategic Management Journal, 22 (6-7), 687-699.

Rowley, J. (2002). Eight questions for customer knowledge management in e-business. Journal of Knowledge Management, 6(5), 500-511.

Rumelt, R. P. (1974). Strategy, structure, and economic performance. Cambridge, MA: Harvard Business School Press.

Rumelt R. P. (1991). How much does industry matter? Strategic Management Journal, 12(3), 167-185.

Sáenz, J., Aramburu, N., & Rivera, O. (2009). Knowledge sharing and innovation performance: A comparison between high-tech and low-tech companies. Journal of Intellectual Capital, 10(1), 22-36.

Salkind, N.J. (2007). Encyclopedia of measurement and statistics. Thousand Oaks, California: Sage.

Sasser, W. (1976). Selling jobs in the service sector. Harvard Business Review, 56(6), 133-148.

Scheuing, E., & Johnson, E. (1989). A proposed model for new service development. Journal of Services Marketing, 3(2), 25-34.

Schneider, B. (1980). The service organization: Climate is crucial. Organizational Dynamics, 9, 52-65.

Schuler, R. & Jackson, S. (1987). Linking competitive strategies with human resource management practices. Academy of Management Executive, 1(3), 209-13.

Schulz, M. (2001). The uncertain relevance of newness: Organizational learning and knowledge flows. Academy of Management Journal, 44(4), 661-682.

Schulz, M. (2003). Pathways of relevance: Exploring inflows of knowledge into subunits of multinational corporations. Organization Science. 14(4), 440-459.

Schulz, M., & Lloyd, A. (2001). Codification and tacitness as knowledge management strategies: An empirical exploration. Journal of High Technology Management Research, 12(1), 139-165.

Schultz, T. (1971). Investment in human capital: The role of education and research. New York: Free Press.

Schwab, D. P. (1999). Research methods for organizational studies. Mahwah, NJ: Lawrence Erlbaum Associates.

Serenko, A., Bontis, N., & Hardie, T. (2007). Organizational size and knowledge flow: A proposed theoretical link. Journal of Intellectual Capital, 8(4), 610-627.

Shamir, B. (1980). Between service and servility: Role conflict in subordinate service roles. Human Relations, 33, 741-756.

Shiah-Hou, H., & Chen, M. (2007). Study knowledge flows moving in business groups with the perspectives of organizational learning. The Journal of Human Resource and Adult Learning, 3(2), 213-224.

Shostack, G. (1984). Designing services that deliver. Harvard Business Review, 62, 133-139.

Shostack, G. (1987). Service positioning through structural change. Journal of Marketing, 51, 34-43.

Shostack, L. (1977). Breaking free from product marketing. Journal of Marketing, 41(2), 73-80.

Skaggs, B. (2008). The effect of customer-firm interaction on lower and higher-order capabilities: Impacts on innovation and performance in service firms. Working paper. Amherst, MA: University of Massachusetts Isenberg School of Management.

Skaggs, B., & Galli-Debicella, A. (2012). The effects of customer contact on organizational structure and performance in service firms. The Service Industries Journal, (32)3, 337-352.

Skaggs, B., & Huffman, T. (2003). A customer interaction approach to strategy and production complexity alignment in service firms. Academy of Management Journal, 46(6), 775-786.

Skaggs, B., & Youndt, M. (2004). Strategic positioning, human capital, and performance in service organizations: A customer interaction approach. Strategic Management Journal, 25, 85-99.

Sin, L., Tse, A., Yau, O., Lee, J., & Chow, R. (2002). The effect of relationship marketing orientation on business performance in a service-oriented economy. The Journal of Services Marketing, 16(7), 656-677.

Singh, J. (1986). Performance, slack and risk taking in organizational decision making. Academy of Management Journal, 29, 562–585.

Singh, J. (1993). Boundary role ambiguity: Facets, determinants, and impacts. Journal of Marketing, 57, 11-31.

Singh, J. (2000). Performance productivity and quality of frontline employees in service organizations. Journal of Marketing, 64(2), 15-34.

Slater, S., & Narver, J. (1995). Market orientation and the learning organization. Journal of Marketing, 59(3), 63-75.

Snider, K., & Nissen, E. (2003). Beyond the body of knowledge: A knowledge-flow approach to project management theory and practice. Project Management Journal. 34(2), 4-12.

Soterioua, A. C. & Chase, R. (1998). Linking the customer contact model to service quality. Journal of Operations Management, 16(4), 495-508.

Starbuck, W. H. (1976). Organizations and their environments. In Dunnette, M., Handbook of Industrial and Organizational Psychology: 1069-1123. Chicago: Rand-McNally.

Staw, B. & Ross, J. (1980). Commitment in an experimenting society: A study of the attribution of leadership from administrative scenarios. Journal of Applied Psychology, 65, 249-260.

Stevens, J. (1996). Applied multivariate statistics for the social sciences. Mahwah, NJ: Earlbaum.

Stevens, J., Beyer, J., & Trice, H. (1978). Assessing personal, role, and organizational predictors of managerial commitment. Academy of Management Journal, 21, 380-396.

Stone, E., & Hollenbeck, J. (1989). Clarifying some controversial issues surrounding statistical procedures of detecting moderator variables: Empirical evidence and related matters. Journal of Applied Psychology, 74(1), 3-10.

Storey, C. & Easingwood, C.J. (1996). Determinants of new product performance: A study in the financial services sector. International Journal of Service Industry Management, 7(1), 32-55.

Swartz, T., & Iacobucci, D. (2000). Handbook of Services Marketing and Management. Thousand Oaks, CA: Sage Publications.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practices within the firm. Strategic Management Journal, 17, 27-43.

Thomas, K., & Allen, S. (2006). The learning organisation: A meta-analysis of themes in literature. The Learning Organization, 13(2/3), 123-140.

Thompson, A. (1989). Customer contact personnel: Using interviewing techniques to select for adaptability in service employees. The Journal of Services Marketing, 3(1), 57-68.

Tasi, W. (2001). Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. Academy of Management Journal, 44(5), 996-1004.

Tseng, S. (2011). The effects of hierarchical culture on knowledge management processes. Management Research Review, 34(5), 595-608.

van Riel, A., Semeijn, J., & Pauwels, P. (2004). Online travel service quality: The importance of pre-transactional services. Total Quality Management and Business Excellence, 15(4), 475-493.

Vang, J., & Zellner, C. (2005). Introduction: Innovation in services. Industry and Innovation, 12(2), 147-152.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in business strategy research: a comparison of approaches. Academy of Management Review, 11(4), 801-814.

Vink, J., Willemsen, G., Stubbe, J., Middeldorp, R. Ligthart, S., Baas, K., Dirckzwager, H., de Geus, E., & Boomsma, D. (2004). Estimating non-response bias in family studies: Application to mental health and lifestyle. European Journal of Epidemiology, 19, 623-630.

Vogt, W.P. (2005). Dictionary of statistics and methodology: A nontechnical guide for the social sciences. Thousand Oaks, California: Sage.

von Hippel, E. (1986). Lead users: A source of novel product concepts. Management Science, 32(July), 791-805.

von Hippel, E. (1989). New product ideas from 'lead users'. Research Technology Management, 32(3), 24-27

von Hippel, E. (1988). The sources of innovation. New York, NY: Oxford University Press.

von Hippel, E. (2005). Democratizing innovation. Cambridge, MA: MIT Press.

Wagner, B. (2003). Learning and knowledge transfer in partnering: An empirical case study. Journal of Knowledge Management, 7(2), 97-113.

Wah, L. (1999). The almighty customer. Management Review, 88(2), 16-23.

Winston, W., & Cahill, D.J. (1995). Squeezing a new service into a crowded market. Binghamtom, NY: The Haworth Press, Inc.

Xu, K., Jayaram, J., & Xu, M. (2006). The effects of customer contact on conformance quality and productivity in Chinese service firms. The International Journal of Quality & Reliability Management, 23(4), 367-389.

Youndt, M., & Snell, S. (2004). Human resource configurations, intellectual capital, and organizational performance. Journal of Managerial Issues, 16, 337-360.

Zack, M. (2003). Rethinking the knowledge-based organization. MIT Sloan Management Review, 44(4), 67-71.

Zahra, S., Neubaum, D. & Huse, M. (1997). The effect of the environment on export performance among telecommunications new ventures. Entrepreneurship Theory and Practice, 22, 25-47.

Zajac, E., Golden, B., & Shortell, S. (1991). New organizational forms for enhancing innovation: The case of internal corporate joint ventures. Management Science, 37, 170-184.

Zaltman, G., Duncan, R., & Holbek, J. (1973). Innovations and Organizations, New York: John Wiley & Sons.

Zander, I., & Zander, U. (2005). The inside track: On the important (but neglected) role of customers in the resource-based view of strategy and firm growth. Journal of Management Studies, 42, 1519-1548.

Zanjani, M. S., Rouzbehani, R., & Dabbagh, H. (2008). Proposing a conceptual model of customer knowledge management: A study of CKM tools in British dotcoms. International Journal of Human and Social Sciences, 2(2), 60-64.