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Organizational Size's Effect Strategic Service Innovation and Strategic Service Delivery Innovation

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Sheikh O. Tejan-Gbla

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Walden University
2018

Abstract

Organizational Size's Effect Strategic Service Innovation and Strategic Service Delivery

Innovation

by

Sheikh O. Tejan-Gbla

MA, Shorter University, 2012

BA, Fayetteville University, 1983

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Policy Administration

Walden University

November 2018

Abstract

Empirical research has established that the service sector is the engine of growth in global economies. Despite the contributions of the service sector to global economies, research in service innovation has been neglected. There are still empirical research gaps especially on the predictors of strategic service delivery innovation (SSDI). The problem statement addressed in this study was that no research used the resource advantage theory to investigate the nature of the relationship between SSI and SSDI with OS as a possible moderator variable. Using resource advantage theory as the foundation, the purpose of this correlational study was to determine whether organizational size moderates the relationship between SSI and SSDI. Survey data were collected from a random sample of IT managers in the United States (n = 250), and data were analyzed using SPSS to specifically test the three hypotheses of the study. The key findings indicated that SSI was positively related to SSDI $F (3, 246) = 428.153$, $p < 0.001$ OS was positively related to SSI ($t = 10.4$, $p < 0.001$), and OS moderated the relationship between SSI and SSDI $F (1, 245) = 0.005$, $p = 0.006$. Using the conceptual framework of the R-A theory was statistically significant to investigate the relationships between the three key variables. Positive social change should be achieved when IT managers realize that strategic service innovation is positively related to strategic service innovation delivery, and is moderated by organizational size, then this information should factor into IT managers' strategic planning to positively impact social change by minimizing cost of production in service delivery to consumers. The outcome of this study was two-fold: academic significance of delivery innovation (SSDI) and managerial significance.

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Dedication

I dedicate this dissertation to the loving memory of my late father Pa-Abu Gbla and

mother Ya-Mariama Bah, aka Or-Yafulah. They imparted in me that the preeminent kind

of knowledge to have is that which is learned for its own sake. In addition, they reminded

me to always remember that regardless of how huge the task, it can be accomplished if it

is done one step at a time with faith and hard work.

Acknowledgments

I would like to thank Dr. Gregory Campbell for his support and guidance. He was instrumental in the writing of this dissertation. My heartfelt gratitude also goes to Dr. Mi Young Lee, my committee member, for her patience and assistance during the ups and downs that went into the completion of this dissertation.

In addition, I would be remiss if I did not send a special thanks to my coworkers, especially Ms. Melba Williams, whose assistance in editing, encouragement, and reading my numerous revisions to facilitate the flow of my dissertation was well-appreciated.

Finally, thanks to my lovely family and friends who underwent this long journey with me. I would never have made it where I am today, if it was not for them always offering their boundless support and love.

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Chapter 1: Introduction to the Study

The service sector is the engine of economic growth and innovation (O'Cass, Song, & Yuan, 2013). The contributions of the service sector to the gross domestic product (GDP) of the total global economy as well as the individual economies of various nations, is well documented. For example, research shows that the service sector contributed over 70% of the GDP of the world's advanced economies (Ostrom et al., 2010) with the valued added to GDP from service activities rising to about 18 percentage points according to the Organization for Economic Cooperation and Development (OECD, 2005). This figure was estimated to rise to 73% in 2008 (OECD 2005; Durst, Mention, & Poutanen, 2015).

Despite these contributions to the global economies, service innovation has been neglected in research (Djellal, Faiz, & Miles, 2013). However, around the last quarter of the last century, scholarly research efforts began to shift toward service innovation (Godin, 2015). Theoretical research aimed at supporting empirical research on service innovation began to emerge, which became the precursor to empirical research in service innovation (Gallouj & Weinstein, 1997).

One of the major conceptual theories that emerged from new research on service innovation was the linear model of innovation that challenged the existing standard of what innovation practically should be (Godin, 2013). The role of theoretical development to accompany empirical research has been emphasized by researchers. To this end, Verma and Jayasimha (2014) commented, "Literature suggests that resource advantage

theory of competition [R-A] by Hunt (2000a) and service-dominant logic (SDL) by Vargo and Lusch (2004) are two fundamental approaches to discuss service innovation at the firm level" (p. 106).

Therefore, because of the importance of these two theoretical platforms for service innovation at the firm level (Verma & Jayasimha, 2014), a detailed discussion of the resource-advantage (R-A) theory is included in the literature review of this dissertation. The service-dominant logic (SDL) can be describe as follows: The marketing discipline adopted a model of exchange from economics, in which the dominant logic of economic exchange was rooted in the exchange of tangible goods. The emphasis on the dominant logic was focused on embedded values in these tangible goods that satisfy customers (Vargo & Lusch, 2004).

However, there is now a new perspective suggesting the dominant logic had shifted to intangible goods, intangible resources, and relationships. In this new dominant logic perspective for marketing, emphasis has shifted to service provision rather than tangible goods as the new fundamental to marketing exchange. That is, intangibility of services has become the epicenter of the new dominant logic or SDL (Vargo & Lusch, 2004).

Even though scholarly research has made these contributions to service innovation, significant research gaps still exist in the current understanding of service innovation (Aas & Pedersen, 2010; Droege, Hildebrand, & Forcada, 2009). For example,

Durst et al. (2015) commented that empirical research on service innovation's impact on a firm level is still lacking despite the growing body of literature (p. 1).

Likewise, Aas and Pedersen (2010) commented on the importance of neglected research gaps in strategic service innovation (SSI), stating that researchers have given little direct attention to service innovation and instead have made implicit assumptions that firm-level service innovation has positive financial results and other effects (p. 759). One of the significant implicit assumptions researchers in service innovation have made is that it is enough to acquire strategic service (Aas & Pedersen, 2014; Verma & Jayasimha, 2014).

Therefore, this dissertation contributes to the service innovation literature through empirical investigation of the degree to which firm-level strategic service delivery innovation (SSDI) is positively linked to (SSI) to jointly impact organizational performance. Second, within this framework, the study also served to investigate whether organizational size (OS) moderated the relationship between SSDI and SSI, providing a response to gaps in the current service innovation delivery literature (Aas & Pedersen, 2014; Verma & Jayasimha, 2014). Thus, I used the theoretical lens of the R-A theory to explore these research objectives to answer three fundamental research questions:

1. What was the effect of strategic service innovation (SSI) on strategic service delivery innovation (SSDI) in a specific location with a population of IT managers in the United States in a specific time frame (August, 2016)?

2. What was the effect of organizational size (OS) on strategic service delivery innovation (SSDI) in a specific location with a population of IT managers in the United States in a specific time frame (August, 2016)?

3. What was the extent of the moderation effect (if any) of organizational size (OS) on the relationship between strategic service innovation (SSI) and strategic service delivery innovation (SSDI) in a specific location with a population of IT managers in the United States in a specific time frame (August, 2016)?

The next section includes the background of the study, the problem statement, and the purpose of the study. In addition, the chapter includes the research questions, hypotheses, and conceptual framework, followed by the nature of the study, definitions, assumptions, the significance of the study, and a summary.

Background of the Study

It has long been established that services have dominated both the developing and developed global economies such that even countries that have historically focused on manufacturing are now growing rapidly in services (Ostrom et al., 2010). For example, in the early 1900s, only three out of every 10 workers in the United States were employed in the service industry; in contrast, currently more than eight out of every 10 workers are employed in the service industry (Fitzsimmons & Fitzsimmons, 2004).

Moreover, services now drive the GDPs of the advanced economies (Gallouj & Djellal, 2010; Ostrom et al., 2010). Hence, both services and service innovation jointly

drive broader economic growth and innovation (OECD, 2005, 2010). Consequently, researchers have commented that given the importance of services to the global economies, research on service innovation should be intensified (Gallouj & Djellal, 2010; Hertog, 2000; Ostrom et al., 2010). For example, Hertog (2000) stated, "In the unfolding knowledge-based economy, services do matter" (p. 491).

Thus, to fully understand the background of the present study, the preceding discussions point to two issues. First, even though service research is beginning to gain momentum, the service concept has remained largely unexplored and fragmented compared to product innovation, so there is the need for further conceptual and empirical analyses (OECD, 2010; Ostrom et al., 2010). Second, the service innovation field has been expanding as it has become more diversified in its approach (Toivonen & Tuominen, 2009). At the same time, theoretical developments that accompany empirical research are equally growing (Chuang & Lin, 2015; Klinner & Walsh, 2013).

With the importance of service innovation in mind, the strategic motive for all forms of firm innovation has been value creation and the delivery of value to customers (e.g., Chuang & Lin, 2015; Klinner & Walsh, 2013; Verma & Jayasimha, 2014). In support of this notion, Chuang and Lin (2015) defined service innovation as "new developments in service processes involved in delivering core products" (p. 278). This definition underscores the importance of the delivery aspect of products and service innovation to customers. Therefore, SSDI was the core dependent (criterion) variable of interest in this current study.

Service delivery innovation has been emphasized in current service innovation research, as SSI is strategically worthless if it cannot be delivered to the customer (Arshad & Qin, 2015; Verma & Jayasimha, 2014). The lack of SSDI is likened to products in a warehouse that cannot be delivered to the customer (Chuang & Lin, 2015). That is, once the innovated services have been delivered to the customers, then the strategic intent of service innovation is accomplished (Arshad & Qin, 2015). Hence, this is the background to the current study.

Problem Statement

The problem statement for this study followed the framework suggested in the literature (Brians, Willnat, Manheim, & Rich, 2011; Field 2013; Simon & Goes, 2010). A review of the literature revealed that no researcher used the R-A theory to investigate the nature of the relationship between SSI, and SSDI with OS as a possible moderator variable. Therefore, this present study involved three variables (SSDI, SSI, and OS) to address a gap in the literature

Since the last decade, research has indicated that services and service innovation are interlinked with the progression of the global economies, as these have been equally linked to consumer value creation (Arshad & Qin, 2015; Droege et al., 2009; O'Cass et al, 2013).

Research on service innovation has demonstrated a shifting trend whereby more than eight out of every 10 workers in the United States are employed in the service industry, as opposed to the early 1990s when only three out of every 10 workers in the

United States were employed in the service industry (Fitzsimmons & Fitzsimmons, 2004). Services now drive the GDP of the advanced economies (Gallouj & Djellal, 2010; Ostrom et al., 2010).

Despite these research findings, research gaps have remained on the causes and consequences of the lack of service innovation research (Arshad & Qin, 2015; Droege et al., 2009; O'Cass et al, 2013). For example, service innovation research has had problems with theoretical developments as an independent discipline (Miles, 2000), and inadequate conceptual platforms have hampered quantitative research (Godin, 2014). Because of this, the correlates of service innovation and SSDI have not yet been well understood (Klinner & Walsh, 2013; Mina, Moreau, & Hughes 2014).

Additionally, even though the organizational literature has provided few theoretical models specific to service innovation (Verma & Jayasimha, 2014), the SSDI research underpinned in these models has almost been nonexistent (Klinner & Walsh, 2013; Miles, 2010; Rusanen, Kaila & Jaakkola, 2014). Related to this problem has been the issue of service innovation researchers using general measures of services developed specifically for product-centric service innovation research (Klinner & Walsh, 2013; Miles, 2000; Ostrom et al, 2010).

Overall, there is evidence that past research has deepened scholarly knowledge of service innovation; yet; research gaps have remained. In particular, investigation of the linkage between SSI and SSDI; is a significant research gap (Arshad & Qin, 2015; Verma & Jayasimha, 2014). There has been an absence of research investigating this gap within

the conceptual lenses of the R-A theory, as well as the moderation effect of OS. Therefore, this current study was aimed to contribute to the literature regarding this research gap.

Purpose Statement

The starting point of a quantitative research purpose statement should be the identification of the key variables in the study (Brians et al. 2011; Hofstee, 2006). In line with this statement, the key variables involved in this quantitative, nonexperimental, survey-based, and correlational study as related to other studies (Hsieh & Hsieh, 2015; see Verma & Jayasimha, 2014), were as follows, SSDI, SSI, and OS.

Having identified these three key variables, the central purpose of this study was to employ the conceptual framework of the R-A theory to investigate empirically whether OS would moderate the relationship between SSI and SSDI, as portrayed in Figure 1. This central purpose of the study was informed by the research gaps in the current service innovation empirical studies. These research gaps include, but are not limited to, the lack of empirical service innovation research (Arshad & Qin, 2015; Droege et al., 2009; O'Cass et al, 2013), the absence of theoretical developments specific to service innovation research (Miles, 2000), and poor scientific understanding of the correlates of service innovation and service innovation delivery (Klinner & Walsh, 2013; Mina et al, 2014),

SSI	SSDI
Independent Variable	**Dependent Variable**

OS
Moderator Variable
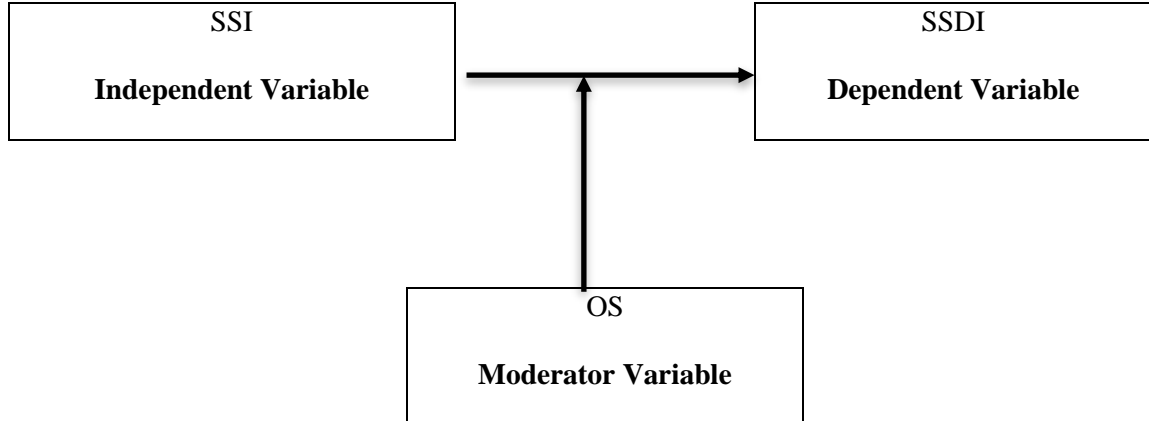
Figure 1. Graphical representation of moderating effect of OS on the relationship between SSI and SSDI.

Operational Definitions of Variables

Strategic Service Delivery Innovation (SSDI)

As shown in Figure 1, the dependent variable of this study was SSDI, which was operationalized using a 10-item instrument with a 7-point Likert scale response format. This instrument was adopted from Verma and Jayasimha (2014, pp. 118–119; see Appendix A).

Strategic Service Innovation (SSI)

As shown in Figure 1, the independent variable of this study was SSI, which was operationalized using scales adopted from Thakur and Hale (2013, p. 1120). Following Thakur and Hale, the three subcomponents of SSI were operationalized as follows: (a) customer demand (three items), (b) competition (four items), and (c) knowledge-based network (four items; see Appendix B).

0Organizational Size (OS)

In the present study, OS was the independent variable that acted as a moderator variable (see Figure 1). In the service innovation literature, a single item measure was typically used to operationalize OS (Leal-Rodriguez, Eldridge, Roldan, Leal-Millan, & Ortega-Gutierrez, 2015, p. 805). Likewise, OS was operationalized with a single questionnaire item asking information technology (IT) managers to indicate the number of employees in their organizations (Leal-Rodriguez et al., 2015).

The three research questions were summed up in a single statistical statement. What amount of the variance in the dependent variable (SSDI) could be explained by the independent variable (SSI), and the moderator variable (OS)?

To answer this question, I followed sampling procedures used in the current research on service innovation and service delivery innovation studies (Hsieh & Hsieh, 2015; Verma & Jayasimha, 2014). Specifically, I procured a sampling frame from Manufacturers' News database to contact IT managers as the survey respondents for this study. Details on this sampling frame are discussed in the Chapter 3.

Research Questions and Hypotheses

In line with the purpose statement, this study addressed the following three research questions with corresponding hypotheses:

RQ1: Is strategic service innovation (SSI) positively related to strategic service
delivery innovation (SSDI)?

$H_0$1: Strategic service innovation (SSI) was not positively related to strategic

service delivery innovation (SSDI).

$H_1$1: Strategic service innovation (SSI) was positively related to strategic

service delivery innovation (SSDI).

RQ2: Is organizational size (OS) positively related to strategic service delivery

innovation (SSDI)?

$H_0$2: Organizational size (OS) was not positively related to strategic service

delivery innovation (SSDI).

$H_1$2: Organizational size (OS) was positively related to strategic service

delivery innovation (SSDI).

RQ3: Is organizational size (OS) a moderator of the relationship between strategic

service innovation (SSI) and strategic service delivery innovation (SSDI)?

$H_0$3: Organizational size (OS) was not a moderator of the relationship

between strategic service innovation (SSI) and strategic service delivery

innovation (SSDI).

$H_1$3: Organizational size (OS) was a moderator of the relationship between

strategic service innovation (SSI) and strategic service delivery innovation

(SSDI).

Cross Products and Centering of Variables

Even though this procedure is related to the methodological design of the study, it

is briefly discussed here to assure how the hypotheses were tested. The raw data on SSI

and OS were centered following the recommendation of quantitative researchers (see Field, 2013; see Hayes, 2013; see Wu & Zumbo, 2007). The main reason was that SSI and SSDI were operationalized using Likert-type scale items. It has been well established that raw data from these Likert-type items would induce multicollinearity in the multiple regression analysis (to be conducted in the second step) to test the hypothesis shown in Equation 1 below. To mitigate the effects of multicollinearity in the raw data, the centering was conducted. By this approach, a test of Hypothesis 1 was conducted.

Hypothesis 1 involved a test of the proposition that the SSI was positively related to SSDI. This hypothesis was tested using the framework of the following hierarchical moderated multiple regression analysis (HMMRA) in the following equation:

$$SSDI = b_0 + b_1 SSI + b_2 OS + b_m(SSI \bullet OS) + e \ (1)$$

where:

SSDI = strategic service delivery innovation (the dependent variable)

b_0 = constant term

SSI = strategic service innovation

b_1 = coefficient on SSI

b_2 = coefficient on OS

b_m = coefficient on the cross-product of SSI & OS (moderation)

e = white noise error term

Hypothesis 1 was focused on the coefficient b_1 on SSI. That is, in the framework of the HMMRA in Equation 1, if and only if, b_1 was positive with the associated *t*

statistic being substantially large to be statistically significant, then and only then, was the null of hypothesis (H_01) not upheld so that the alternative hypothesis (H_11) was then upheld or supported. Once the null was not upheld, then the alternative hypothesis was upheld. The word *positive* was underscored following the postulations of the R-A theory.

Hypothesis 2 was focused on the coefficient b_2 on OS. Specifically, this was a test of the proposition that the unique effect of OS on SSDI is statistically significant as would be the case if OS had a main effect on SSDI, as demonstrated in Equation 1. In the framework of the equation, if and only if, the coefficient denoted as b_2 on OS was positive such that the associated t statistic was large enough to be statistically significant, only then was the null hypothesis (H_02) rejected. With the null rejected, the alternative hypothesis (H_12) was then accepted.

Hypothesis 3 was focused on the coefficient b_m on (SSI*OS). Specifically, this was a test of the proposition that the moderation term on the joint effect of SSI and OS on SSDI was statistically significant to suggest that moderation effect was statistically significant for the study. In the framework of Equation 1, if and only if, the coefficient denoted as b_m on (SSI*OS) was positive such that the associated t statistic was large enough to be statistically significant, only then was the null hypothesis (H_03) rejected. With the null being rejected, the alternative hypothesis (H_13) was then accepted. Finally, once the coefficient on OS was statistically significant at the conventional level, then OS was a moderator variable in this study.

Theoretical and/or Conceptual Framework

R-A theory by Hunt (2000) and SDL by Vargo & Lusch (2004) have been noted as two main theories for service innovation research Verma & Jayasimha, 2014. Because the SDL was not the focal theory for the present study, only a brief overview of SDL is presented. Due to the importance of these two theoretical platforms for service innovation at the firm level (Verma & Jayasimha, 2014), an overview of the R-A theory is presented here, with a detailed discussion of the R-A theory included in Chapter 2.

Vargo and Lusch (2004) described SDL as a concept, that the marketing discipline adopted where the dominant logic of economic exchange was rooted within the exchange of tangible goods. The dominant logic has been focused on embedded values in these tangible goods that satisfied customers.

Now, the dominant logic has shifted to intangible goods, their resources, and their relationships. In this new dominant logic perspective for marketing, the emphasis is now on service provision rather than tangible goods as the new fundamental to marketing exchange. That is, intangibility of services has become the epicenter of the new dominant logic or SDL (Vargo & Lusch, 2004).

The R-A theory is an evolutionary (process-driven) theory of competition first proposed by Hunt and Morgan (1995), and later discussed by Hunt (2000). The core tenet of the theory is intra industry consumer groups, called market segments, with relatively homogeneous tastes and preference; they compete among themselves for resources.

Resources are defined as tangible and intangible value-laden materials available to firms for efficient production of goods and services through innovation (Hunt, 1995).

Within the R-A theory, there are six types of resources: human, financial, legal, organizational, informational, and relational (Hunt, 1995). In R-A theory, competition is viewed as a constant struggle among firms for comparative advantages in resources that will give them marketplace positions of competitive advantage for some market segment(s). By this approach, firms acquire superior financial performance as the goal of their overall strategic intents.

Notably, the R-A theory does not include competitive advantage generically to encompass all kinds of firm advantages (Hunt, 1995). Instead, the theory holds a distinction between the positional advantages of market offerings from the comparative advantages of the resources that lead to such advantages. For example, for R-A theorists, competences are higher order resources such as service innovation, which are acquired through a reconfiguration and recombination of intangible (human resources) and tangible financial resources (Hunt, 2000). Firm-level positional market advantages occur primarily to the extent that some firms are able to achieve and deploy these resources (e.g., service innovation competence) better than their competitors do in the same industry (Hunt & Morgan, 1996).

Nature of the Study

In the framework of this study, a quantitative, non-experimental, research design was used to gather data from the participants on survey questionnaires. When the

independent variables involved in a study are subject to researcher manipulation, a non-experimental research design is appropriate (Johnson & Christensen, 2000).

In addition, a survey approach is appropriate for quickly measuring opinions of a sample group that can be generalized across the population (Creswell, 2013, pp. 153–154). Therefore, in this study, data were gathered from U.S. IT executives (managers) via survey questionnaires. This quantitative research method allowed for the understanding of the nature and direction of relationship between the following:

- Dependent variable (SSDI): SSDI was the only dependent variable of this study. This dependent variable is also alternately called the criterion variable of interest for the study as well as the left-hand-side (LHS) variable of major interest for the study.

- Independent variable (SSI): SSI was the only independent variable of the study. It is alternately called the right-hand-side (RHS) variable used to explain the major variations in the dependent LHS variable.

- Moderator variable (OS): A moderator variable is a third variable in the important sense that it is also an independent variable That impacts the relationship between the dependent variable and the key independent variable.

A moderator variable is an independent variable The key independent variable in this study was SSI. The theoretical proposition was that SSI would predict the dependent variable, SSDI. However, the predictive role of SSI on SSDI was assumed to be

attenuated (dampened) by the moderator variable (OS). Statistically, the variance on SSDI explained by SSI must be statistically significant over and above the variance on SSDI explained by OS. In other words, the interaction between SSI and OS had to be significant for moderation to occur.

A classic illustration of moderation was originally modeled and tested in the relationship between stress and depression. Stress leads to depression, but it also depends on the level of social support (Cohen & Wills, 1985). That is, in this situation depression would not have occurred if social support buffered the stress. In this example, both stress and social support are independent variables, yet each has a different role. Stress is the key independent variable, while social support is an independent variable playing a moderation role. Likewise, in the present study, SSI was the key independent variable while OS was an independent variable playing a moderation role.

<div align="center">**Definition of Terms**</div>

Centering Predictor Variables: Centering suggests computing a constant (typically the mean) from every value of a variable (typically a predictor variable). This way, centering redefines the base value of the variable from the zero point of the variable to whatever value that is subtracted. Practically, when a predictor variable is centered, the zero mean becomes the value of the dependent variable when the predictor variable is zero Faul, F., Erdfelder, E., Buchner, A. & Lang, A. G. (2009).

Service Innovation: According to W- J. Chen (2011), service innovation " is the development of novel and useful ideas for improving service effectiveness" (p. 64).

Strategic Service Delivery Innovation (SSDI): Following J- S. Chen, Hung, and Huang (2009), "Service delivery refers to the actual delivery of a service and the delivery of services and products to the customer" (p. 38). Thus, SSDI is service delivery innovation that is deployed in a manner that it maximally contributes to the overall objective of the firm.

Strategic Service Innovation (SSI): SSI is service innovation deployed in a manner that maximally contributes to the overall objective of the firm. Edvardsson, B., Meiren, T., Schafar, A., & Witell, L. (2013).

Strategic: In this study, *strategic* refers to the deployment of any resource that maximally contributes to the overall objective of a firm (Porter, 1996).

Assumptions

This study included four assumptions. The assumptions, discussed in the following sections, address singularity of matrices, respondents' honesty, statistical integrity, and HMMRA.

Singularity of Matrices

In this study, discussions rested on one critical assumption regarding the nature of the survey data in that there would be nonsingular matrices of data. In other words, all statistical analyses prompted by the research objectives were assumed to lead to the tests of the hypotheses subject to obtaining well-behaved and fine-grained data from the respondents, including nonsingularity of matrices derived from the data sets gathered.

Respondents' Honesty

This study also included the assumption that the information elicited from the respondents would be honest and accurate as the authentic representation of the events in their business organization. Even though the questionnaire prompted respondents for their unbiased, honest opinions on the questionnaire items, the assumption was that the respondents would be sincere and honest as requested.

Statistical Integrity

Finally, well-established statistical procedures and techniques were used to ascertain the validity and reliability of the information the respondents provided. However, there is no guarantee beyond statistical evidence that the information (data) elicited is error-free in the methodological sense of error (intentional or unintentional).

Hierarchical Moderated Multiple Regression Analysis (HMMRA)

Because HMMRA was the statistical technique used for this study, the assumptions underlying this technique were evaluated accordingly. These assumptions included outliers and normality of residuals.

Outliers: I checked whether there would be influential outliers present in the variables for this study.

Normality of residuals: I checked only the observed residuals (not the unobserved errors) to assure normal distribution (see Field, 2013; see Francis, 2013).

However, I did evaluate the normality of the observed residuals . In SPSS, normality of residuals is assessed using a histogram and p-p plot of standardized residuals plots (Field, 2013; Francis, 2013). Separate figures detail the SPSS results of these tests when the procedure was conducted with data.

Scope and Delimitations

I used the conceptual framework of the R-A theory to empirically investigate the relationships between three key variables (Verma & Jayasimha, 2014): SSDI, SSI, and OS. Within this scope of the study, boundaries were imposed by decisions made in the design of the study. Among these decisions were the choice of the problems related to service innovation under empirical scrutiny based on problems related to service innovation in the current literature, Another boundary was created by the decision to position the study within the population of IT managers in the United States rather than other plausible populations of IT managers Similarly, the decision to use a quantitative methodology rather than a mixed method approach (among other equally plausible alternatives) is another boundary.

Limitations

As with any other questionnaire-based cross-sectional research design, this study had limitations imposed by research issues beyond my control as a researcher. For example, an uncontrollable limitation in a correlational study relates to the sample drawn from a specific population rather than other equally likely populations. In the present study, organizational key informants such as IT managers, were targeted even though it

was equally likely that other IT managers could provide the same or superior data on the same issues of interest.

Therefore, even within the same population in the same organization, the data gathered to answer the research questions could be dependent on who was targeted. The research questions posed and answered, as well as the hypotheses tested, were dependent on the population that was sampled within the organization. This is part of why future researchers may examine different samples within the same organization to overcome this potential limitation.

Furthermore, in this correlational study, one of the limitations inherent in this research design relates to the fact that correlation is not causation (Field, 2013; Hayes, 2013; A. D. Wu & Zumbo, 2007).. Specifically, the study cannot demonstrate that causality flows from SSI to SSDI.

Even if such a demonstration could be attained, there would still be the problem of endogeneity or reversed causality. The latter would require that lagged values for SSDI be entered as one of the right –hand side variables in a longitudinal research design to mitigate the confounding effects of potential reverse causality. Overall, these potential limitations are typically relegated to future studies.

Significance of the Study

This study contributes to the increasing research on the hypothesized moderated positive link between organizational SSI and organizational SSDI within the IT consulting industry. These contributions were made by extending past research with

mixed findings that represent research gaps to be filled. Thus, the significance of this study is in line with the views of scholars on the importance of service innovation to society (Aas & Pedersen, 2010; Durst et al., 2015; OECD, 2005).

Hence, by integrating this statement with the Walden University dissertation guidelines, this study will have significance in terms of the following: (a) advancing theory, (b) advancing professional practice, and (c) contributing to positive social change.

Significance to Theory

The findings of the study have theoretical implications with respect to theory-building on the moderated positive predictive impact of SSI on SSDI. Empirically demonstrating that the amount of the variance in the dependent variable (SSDI) explained by the independent variable (SSI) and the moderator variable (OS); was statistically significant makes a contribution towards theory-building on service innovation conceptualization and research in the following ways.

First, the outcome of this study contributed toward theory-building specific to SSI and SSDI. The theoretical contributions of this study arose from the new knowledge scholars will gain from the outcome of the study. For example, scholarly knowledge that SSI predicts the variance in SSDI after controlling for the unique prediction of the variance in SSID by OS (moderator variable), is a contribution to the literature.

Second, research indicates that the empirical dimensions of SSDI is unknown to scholars (J- A. Chen et al., 2009; Ledimo & Martins, 2015). A significant theoretical contribution of this study is to inform current research efforts on the investigation of the

empirical dimensions of SSDI (J- A. Chen et al., 2009). Finally, it is well established that cumulative research findings underscore theory-building in academia (Churchill, 1979; Hunt, 2000). To this end, the outcome of this study serves as a call for further studies in this area so that a process of cumulative research findings leads to further work on theory-building in this area.

Significance to Practice

With respect to the significance of this study to practice, the outcome of this study was two-fold: academic significance of delivery innovation (SSDI) and managerial significance. For the former, the study contributed to scholarly empirical knowledge of how SSI and OS jointly impact SSDI. With respect to the latter, the findings of this study add to the current understanding of service innovation by policymakers, political leaders, and managers who are charged with the social and economic developments of the country.

Significance to Social Change

The main objective of this quantitative, nonexperimental, and survey-based study using the conceptual framework of the R-A theory was to investigate the relationships between the three key variables of SSDI, SSI, and OS (see Verma & Jayasimha, 2014) Therefore, if the empirical evidence in this study suggests that SSI drives strategic service, but is moderated by OS, then the following significant social changes would occur.

With the main objective of this study in mind, SSDI was the dependent variable of major interest. Even the best-developed strategies are worthless without implementation. Because SSDI was the dependent variable, the significance of this study to social change is tied to the implementation of SSDI in the service industries.

First, the study provide information that could positively affect social change by service innovation through various areas in human technological interface. A current example in the news is "the next big thing" (PricewaterhouseCoopers, 2014) on wearable technologies. Wearable technologies (e.g., Oculus Rift, Samsung watch, etc.) are the next big things that are shaping the SSDI landscape (McGee, 2014; Sheppard, 2014). Service organizations such as major airlines and hotel chains are even experimenting on how wearable technologies can improve the values creation for their customers.

Even though research is lagging on how wearable technologies are impacting SSDI in the public sectors, such as the federal and state departments of labor, there is the obvious need to survey managers of these departments to collect information on how wearable technologies are contributing to service delivery to their customers. This way, these government agencies may incorporate wearable technologies into their strategic plans.

To this end, research in wearable technologies can benefit from the recent developments in service innovation research instruments such as the Technology Readiness Index (Parasuraman & Colby, 2015). It is important to determine the extent of technology readiness of these governmental departments before asset deployments in

wearable technologies can be effectively implemented (Sheppard, 2014). These wearable technologies enable functions otherwise thought impossible (Parasuraman & Colby, 2015) and include, but are not limited to, Microsoft HoloLens, Google Glass, Oculus Rift, and Samsung Watch.

Wearable technologies may be the trigger for better employee training in the department of labor, as "they provide wireless connectivity, on-board analytics, and interfaces for hand-free feedback" (Bower & Sturman, 2015, p. 343). Public and private funds and other scare resources be deployed strategically in providing educational training for employees.

This discussion is consistent with the view that strategic research and learning activities at the university are driven by the overall objective of continuous improvement in the pursuit of the best social change deliverable to the university stakeholders. To sum up, the objective of this study was to focus on ensuring that the findings of make a positive contribution toward social change to the benefits of the societal stakeholders.

<div align="center">**Summary**</div>

In response to suggestions to fill research gaps in the current literature on SSI and SSDI, the study was designed to quantitatively investigate the nature of the relationship between SSDI and SSI. In so doing, the investigation covered whether OS moderates the relationship between SSDI and SSI. To outline this purpose, in addition to introducing the study as a whole, the major sections of this chapter included the research design and its rationale, research methodology including the population, sampling frame and the

procedure to contact the respondents, instrumentation and construct operationalization, data analysis strategy including reliability and validity issues.

Chapter 2: Literature Review

Despite the importance of SSI, researchers have not directly researched its effects but have only made assumptions of its positive effects Aas & Pedersen 2010, p. 759). For example, researchers have assumed that the SSDI system is always guaranteed to work efficiently once the SSI has been configured (Aas & Pedersen, 2010). However, this assumption has been shown to lack empirical validity (Aas & Pedersen, 2010; Salunke, Weerawardena, & McColl-Kennedy, 2013).

Accordingly, the purpose of this research study was to investigate empirically the hypothesized influence of SSI on the SSDI, with SSDI as the dependent variable. To this end, a conceptual model of a service innovation system to guide empirical research on SSDI research was developed which provided a theoretical foundation for the present research (see Hertog, 2000). The scope of this literature review includes the following key sections: the literature search strategy used for the review, the theoretical foundation of the study, the main literature review, and a summary and conclusion.

Literature Search Strategy

In preparation for the literature review, article searches were conducted from multiple databased such as Google Scholar, Academic Search Complete, EBSCOhost, Multidisciplinary Databases, Business Source Complete, Science Direct, LexisNexis, and ProQuest. The main keywords used in the search were service innovation, process

innovation, service delivery innovation, strategic service delivery innovation, resource advantage, and service innovation theory.

In addition, conference papers, books, and Internet sources were selected to deepen understanding of the key concepts of SDI, SSI, and performance. The selected peer-reviewed journal articles were mostly published from 2010 to 2014. However, a few of the articles are older than this 5-year timeline. In selecting peer-reviewed journal articles beyond the 5-year time frame, the intent was to ensure coverage and deepening of knowledge of the major concepts, themes, and subthemes of the study topic. Following the article search, the review of literature was centered on the major themes of SSI, SSDI, and firm performance.

Theoretical Foundation

R-A Theory

The theoretical foundation for this study was the R-A theory, developed by Hunt (1995) and Hunt and Morgan (1995). It is important to outline the key structural elements of the R-A theory before discussing its propositions and how these were relevant to this study.

The R-A theory is a theory of theories because it integrates two theories namely \ the resource-based view (RBV) theory (Barney, 1991), and\the competence-based theory (Sanchez, Heene, & Thomas, 1996). Figure 2 illustrates how the R-A theory juxtaposes the RBV and competence-based theories.
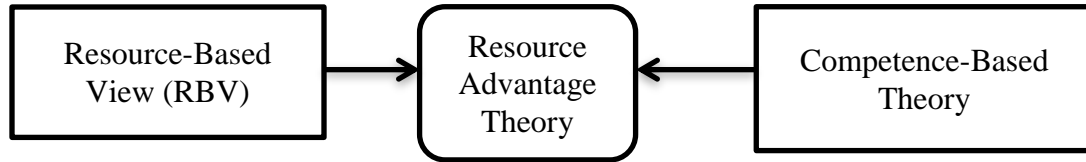
Figure 2. Illustration of how the resource advantage theory integrates two theories.

Focusing on the RBV, one the key strands is that.

- Resources are either tangible or intangible; in either form, in the RBV,

  resources are both heterogeneous and imperfectly mobile among firms

  (Barney, 1991).

- More importantly, firms are heterogeneous with respect to the resources they

  possess. Thus, the emphasis is on the possession of the resources (Barney,

  1991).

In contrast, to RBV, in competence-based theory, it is assumed that the

heterogeneity across firms in their effective deployment of resources in crafting their

strategies will explain organizational differences in performance in the marketplace

(Sanchez et al., 1996). Thus, emphasis is not on resource possession but rather on the

strategic know-how to effectively reconfigure and deploy resources.

In this juxtaposition framework, the R-A theory of organizational competition

draws on both the RBV and the competence-based theory to contend that resources are

significantly heterogeneous and imperfectly mobile between firms and, emphasize that

resource deployment over mere resource possession is key to superior performance

(Hunt, 2000; Hunt & Morgan, 1995). This is a critical difference, as scholars have

attested (see Hughes & Morgan, 2007). The R-A theory was relevant to this present study

because it provided the critical theoretical framework and conceptual lens that enhanced the understanding of the empirical relationships among the three key variables in this study: SSDI, SSI, and OS.

Within the R-A theory, each of these variables were viewed as higher order strategic variables for achieving superior organizational performance (see Hughes & Morgan, 2007). These three variables and their relationships were presented in Figure 1.

Finally, the hallmark of the R-A theory is its relevance to organizational innovation, especially service innovation premised on intangible strategic assets in the present knowledge economy (Arshad & Su, 2015). From this perspective the R-A theory postulates that managerial reluctance to engage in innovation is destructive to the organization, as this will result in market failure (Arshad & Su, 2015). With this theoretical discussion in mind, the main literature review presented.

Literature Review

The R-A theory suggests that both SSDI and SSI, are strategic resources that are heterogeneous and imperfectly mobile between firms, and also emphasizes the competence of managers to strategically deploy SSDI and SSI for superior organizational performance (Arshad & Su, 2015). Thus, the key for superior performance lay primarily in managers' competence to configure and deploy SSDI and SSI, but not on mere resource possession per se (Hunt, 2000; Hunt & Morgan, 1995). Again, this is a critical and noteworthy uniqueness of R-A theory as distinct from the RBV, (Hughes & Morgan, 2007).

Because the R-A theory is a conditional theory, it was used to postulate that SSDI performance is contingent on managerial competence to strategically configure both SSDI and SSI moderated by OS to translate to superior organizational comparative advantage and performance. Thus, the following Equation 2 represents this notion of conditionality in mathematical shorthand form:

$$SSDI = f \text{ (SSI \& Firm Age) (1)}$$

Where f is the functional form of the statistical distribution which links SSDI to SSI and firm age; hence, f means "depends on" or "contingent on." Equation 2 ties the current study to the R-A theory platform, as has been demonstrated in the works of scholars in strategic management (see Hunt, 2004). To see this clearer, the information in Equation 2 is the same as in a standard multiple regression equation.

Quantitative Research on Service Innovation

Because this study was premised on quantitative research on service innovation, a review of the literature on quantitative (empirical) research on service innovation is presented in line with Walden University's dissertation guidelines.

An important study to highlight was conducted by Salunke et al. (2013) who investigated the nature of the linkages between service innovation predictors and organizational sustainable competitive advantage. Similar to the current study, Salunke et al. first identified major research gaps in the current empirical research in service innovation. These research gaps defined and guided their research objective as the investigation of the link between sustainable competitive advantage via service

innovation (the dependent variables), and two independent variables; service

entrepreneurship, and bricolage (defined as strategic configuration of available resources

to create value for customers). Figure 3 represents an attempt at a diagrammatic

representation of Salunke et al.'s hypothesized model.

Figure 3. Salunke et al.'s hypothesized model of service innovation sustainable

competitive advantage linkages.

The result of Salunke et al.'s study suggested that service entrepreneurship and

bricolage positively predict two forms of service innovation interactive and supportive. In

turn, these two forms of service innovation (interactive and supportive) positively impact

organizational sustainable competitive advantage. Thus, Salunke et al.'s result suggest

that both service entrepreneurship and bricolage positively impact sustainable

competitive advantage only through service innovation, as shown in Figure 3.

Other research has shown the importance of service delivery innovation. For

example, Verma and Jayasimha (2014) surveyed 203 service delivery respondents in the

Mexican financial and IT firms to empirically test the hypotheses that architectural

configurations for service delivery innovations determine service delivery results. They

investigated the moderating role of customer orientation on service delivery innovation as

an organizational outcome (Verma & Jayasimha, 2014). Results showed that customer orientation enhances the empirical relationship between service delivery strategy and organizational performance (Verma & Jayasimha, 2014). The managerial significance of Verma and Jayasimha's study suggests it contributes to strategic planning of service firms on resource allocation toward sustainable performance and growth.

Similar studies have been conducted showing the role of management in successful service innovation. Kindstrom, Kowalkowski, and Sandberg (2013) used dynamic capabilities to examine the extent to which service innovation is supported by the management of the dynamic capabilities involving the subcomponents of sensing, seizing, and reconfiguration

Kindstrom et al. argued that managers should understand the need for product-centric firms to compete by adding services components to their product portfolios. They argued that addition of service components to organizational product portfolios would require a greater focus on service innovation and that a major challenge associated with the shift from product centeredness to a product-and-service orientation is the management of the dynamic capabilities of sensing, seizing, and reconfiguring needed for service innovation (Kindstrom et al., 2013). Through this research, Kindstrom et al. extended existing work on service innovation related to manufacturing industries by identifying the key microfoundations involved in extending service innovation to manufacturing industries.

In addition to the management of dynamic capabilities, managers'

acknowledgment of successful service innovation strategies can lead to better service innovation. Edvardsson, Meiren, Schafar, and Witell (2013) empirically investigated the role of major strategic factors in new service development, focusing on the role of four variables in new service development: service development strategy, formalized development process, integrated development teams, and customer co-creation. Edvardsson et al. used a sample of 500 new service development project managers' perceptual data to test the study propositions centered on the assumption that each of the four variables positively and significantly explained a portion of the total variance in the dependent variable (new service development).

Edvardsson et al.'s results showed that customers' cocreation was perceived as potentially the most successful new service development However, Edvardsson et al. also found that a service development strategy is the "missing link" in improving new service development performance, beyond managers' belief variables. Additionally, Edvardsson et al. found an interaction effect between integrated development teams and customer co-creation, suggesting that project managers should focus on individual competencies on the development team and how they interact with customers throughout the new service development process.

Not enough attention is spent on new service development, which is indicated by the number of new services put on the market and then later withdrawn due to low sales revenue remains as high as 43%. (Edvardsson et al., 2013) Therefore, successful service innovation is supported by managers and their attention on new service development.

Another important concept in service innovation is how organization access

different resources, which is also significant for managerial attention. For instance

Rusanen, Halinen-Kaila, and Jaakkola (2014) investigate how organizations access

different types of resources within a network of interorganizational collaborations as they

pursue service innovations. Rusanen et al. identified the types of resources that

companies seek from one another and examined the nature of relationships and resource

access strategies that these sampled organizations applied to access each type of resource.

They identified four types of resource access strategies among the range of resources and

networks organizations use: absorption, acquisition, sharing, and cocreation (Rusanen et

al., 2014). They found that organizations can easily transfer resources across weak

relationships and low-intensity collaborations. Conversely, they found that access to

resources that are difficult to transfer required a strong relationship and high-intensity

collaboration (Rusanen et al., 2014).

Managers can note from Rusanen et al.'s study that key resources for service

innovation might be accessible through a variety of organizational actors and

relationships, including formal arrangements and miscellaneous social contacts. Further,

managers should aspire to access interorganizational tacit resources such as knowledge

by engaging in intensive collaboration (Rusanen et al., 2014).

C- W. Wu (2014) used interview data on 475 consumers to tests four hypotheses

on whether technology leadership, service leadership, brand equity, and customization

are the key determinants of customer loyalty in a context in which the service provider

and the customer interact. C- W. Wu found that each of the four hypotheses supported his propositions that in-service innovation, technology leadership, service leadership, brand equity, and customization are the key determinants of customer loyalty as his structural equation modeling suggested. Consequently, C- W. Wu discussed the theoretical and managerial implications of the research findings.

Sharma, Conduit, and Hill (2014) used the conceptual platform of dynamic capability on customer cocreation in service innovation to qualitatively identify organizational capabilities that support customer participation in health care service innovations in Australia. Sharma et al. found four categories of organizational capabilities relevant to service innovation in health care: customer activation, organizational activation, interaction capabilities, and learning agility. Additionally, Sharma et al. found evidence suggesting that even though managers acknowledge the need for these capabilities in service innovation, most health care organizations perceived they had not developed the required skills and resources to strategically deploy them for competitive advantage in service innovation. Thus, Sharma et al. provided insight into the organizational capabilities managers should have to improve their customer participation as well as in-service innovation.

Jaw, Lo, and Lin (2010) used a mixed method research approach with survey data to investigate whether new service development (dependent variable) was driven by the following three independent predictor variables: service characteristics, market orientation, and efforts in innovation. Jaw et al. found empirical evidence suggesting that

service characteristics of heterogeneity and perishability and market orientation positively influenced organizational resources and reward in innovation.

Additionally, efforts in innovation and market orientation positively impacted new service development performance (Jaw et al., 2010). Further, Jaw et al. (2010) argued that the outcomes of their research would benefit the development of the innovative advantages of service firms in contrast to physical goods. Beyond this, Jaw et al. claimed one of the unique contributions of their study was that their empirical results came from various service industries they surveyed, in contrast to past research results with results derived from single case studies in the service industry. Hence, Jaw et al. postulated that their empirical evidence would lead to a generalized model applicable across service industries.

Hu, Ou, Chiou, and Lin (2012) theorized that knowledge sharing is a critical resource because it promotes service innovation, and service innovation promotes organizational competitive advantage and performance. Hu et al. argued that the reciprocal principle suggests more knowledge-sharing promotes relationships among team members and between superiors and subordinates, if the quality of the knowledge shared is high quality. To test this proposition, Hu et al. used a case study research approach with a large sample of 466 participants to investigate the relationship between service innovation and knowledge sharing, and other variables they hypothesized as mediator variables between knowledge-sharing and service innovation.

First, Hu et al. (2012) found improvements in team service innovation could

promote the competitiveness of organizations in the service industry, by inference.

Second, a high level of trust among superiors, subordinates, and team members would

make them more willing to share valuable and useful knowledge. Thus, the greater the

quality of information shared, the more the impact of knowledge-sharing on

organizational innovation. Third, leader–member shared knowledge and team–member

shared knowledge mediated the relationship between knowledge-sharing and service

innovation, and trust moderated the relationship between knowledge-sharing and both

leader–member shared knowledge and team–member shared knowledge. Finally, Hu et

al. inferred that their findings could be applied to improve communication among

employees, enhance knowledge-sharing, and promote service innovation and

performance.

       Harrison, Mcmillan, and Dickinson (2012) focused on service innovation in the

health care industry to examine two innovative approaches for physically screening

psychiatric inpatients for various dangerous life-threatening diseases (hypertension,

obesity, diabetes, and more). Harrison et al. used the two newly innovated screening

approaches in two separate hospital wards with each ward engaged in service process

improvements. Of the two hospital wards, one used what Harrison et al. called a

"modified method" of screening, while the other ward used "a discharge screening clinic

method" (p. 157).

       Harrison et al. (2012) compared the effectiveness of both approaches against the

baseline (typical) methods. Overall, even though the modified method approach was

found to have increased the screening rate from 4.7% to 30.7%, the discharge screening

clinic method demonstrated a statistically significant improvement in screening rates in

addition to being capable of producing far better health promotion results. Harrison et al.

inferred that the discharge screening clinic method was significantly more likely to detect

clinically important abnormalities where they may exist and that if these abnormalities

would be detected and treated, chances are that the long term physical health of

psychiatric patients would be improved.

   Chaparro-Pelaez, Pereira-Rama, and Pascual-Migue (2014) theorized that the

building sector in Spain had witnessed unprecedented slowdown as a consequence of the

financial meltdown in Spain. As a result, managers of small and medium (SME)

enterprises in this sector are surviving primarily because of their strategic flexibility in

adopting IT-enabled service innovation strategies. To empirically identify antecedents of

inter-organizational IT-enabled service innovation adoption in Spain's building sector,

Chaparro-Pelaez et al. collected 6-year panel data and analyzed them using partial least

squares (PLS) techniques that uncovered the temporal stability of the building sector.

   Overall, Chaparro-Pelaez et al. (2014) identified four major ways

interorganizational information systems could contribute to service innovation in the

building sector of Spain. These four ways were: (a) improving both client services and

the linkages between service providers and customer end users, (b) mapping out specific

market niches where SMEs may develop new service ideas, (c) promoting new service

delivery systems that will displace the old systems, and finally, (d) introducing

information and communication technologies that would improve information

management strategies (Chaparro-Pelaez et al., 2014).

Chong and Zhou (2014) commenced their study by first defining E-supply chain

integration as the integration of an organization's upstream suppliers and downstream

customers using Internet capabilities. Using this operational definition, Chong and Zhou

investigated the relationship between the drivers of service innovation performance and

the adoption of web-based E-supplier integration, using data collected from the health

care industry. The results of the study suggested that web-based demand chain

management (DCM) improved service innovation performance and also suggested that

the implementation of a web-based DCM has a positive impact on service innovation

performance than would be the case for organizations that implemented either web-based

demand or web-based supply management. Chong and Zhou concluded that the outcome

of their study would be beneficial to organizations interested in improving their service

innovation performance, among other recommendations.

Using a 2-year sample of organizations with service innovation, Jimenez-Zarco,

González-González, Martínez-Ruíz, and Izquierdo-Yustad (2015) conducted an empirical

service innovation study with a two-fold research objective:

1. To investigate whether cooperative learning and the use of information and

   communication technologies (ICT) drive new service innovation success, and

2. To investigate whether the use of ICT (a) positively and significantly

   influences innovation results, and (b) whether the use of ICT moderates the

positive relationship between colearning and the result of service innovation. Overall, the results of the study suggest that colearning has both a direct influence and a moderating effect on perceived and objective results of service innovation, among others. According to Jimenez-Zarco et al., the results of their study would provide strategic recommendations to managers of SMEs on service innovation management.

Mina et al. (2014) argued that, increasingly, firms are looking for knowledge beyond their traditional organizational boundaries. Thus, knowledge search and acquisition beyond the traditional firm boundaries have been studied as "open innovation" from the perspective of manufacturing firms. According to Mina et al., open innovation studies should equally include the service sector, given the predominant role of the service economy in the advanced global economies. Based on this background, Mina et al. studied the open innovation practices of service business firms compared to the open innovation practices of manufacturing business firms, gathering a relevant dataset containing information on open innovation activities of firms in the United Kingdom.

Methodologically, Mina et al. (2014) used ordinary least squares (OLS) statistical techniques for data analysis. Understandably, OLS was appropriate for data analysis given the normalization procedure Mina et al. used. Overall, the results of the study suggested that firm size and research and development (R&D) expenditures increase in tandem with open innovation engagements of firms. Second, business services firms were more likely to be involved in open innovation than were manufacturing firms. Further,

business services firms were more likely to attach more importance to scientific and

technical knowledge than were manufacturing firms. Third, open innovation practices

were more likely to be inclined toward the adoption of service-inclusive business models

than were those of manufacturing firms. Finally, Mina et al. concluded that their study

had made a significant contribution toward a reconceptualization of the open innovation

construct in service businesses, as well as a deeper practical understanding of the service

economy.

Boor, Oliveira, and Velos (2014) used the theoretical platform of service

innovation diffusion to examine users of financial services as service innovators in the

developing countries. Specifically, Boor et al. investigated three research questions:

1. Users in developing countries are co-creators of service innovation, but what

   is the level of their cocreation?

2. What variables act as drivers of service users' innovation cocreation?

3. Globally, what is the diffusion pattern of service innovation emanating from

   the developing countries?

Boor et al. used a multimethod longitudinal analysis to gather data and perform data

analysis. They used an in-depth, historical analysis procedure to extract data on different

categories of innovation in the financial services sector, then recruited inter-raters to

cluster the different service usages in each category in the dataset (Boor et al., 2014).

Using this approach, Boor et al. (2014) had a sample of 20 financial service

categories which included, but were not limited to mobile banking that allows banking

services on mobile phones, mobile commerce that allows purchases of goods via mobile phones, and mobile money that allows transactions involving money on mobile phones, and so on.

Finally, Boor et al. (2014) found extensive evidence suggesting that users in the developing countries represent important sources of new service innovation in financial services, and these innovations may be classified as "new-to-the-world" financial services. Boor et al. found evidence suggesting that three major enablers drive financial services innovations in the developing countries:

1. Need was the underlying factor in financial services innovation in developing countries.

2. The gap in technological advancement between the developed and developing countries necessitated ingenious use of the available technologies to do other things beyond the anticipated traditional usage.

3. The user service innovation diffusion rate was 2 times wider and 3 times faster than producer innovations.

Boor et al. (2014) suggested that there is the possibility that these user innovations in financial services might be extended to occur in industries other than the finance sector, using the finance sector as a springboard.

Liao, Chou, and Lin (2015) focused on service innovation failure (or consumer innovation resistance in services). They used the theoretical underpinning of service sabotage (a theory that proposes the antecedents and the consequences of the inability of

service providers to deliver promised services to the consumer) to investigate (a) the organizational factors related to service failure including newly innovated services, and (b) factors related to consumer service avoidance conditional on service failure (Liao et al., 2015). Liao et al. gathered data from 424 consumers who responded to their questionnaires posted on online on social media and analyzed the data using an SEM statistical technique.

Overall, Liao et al. (2015) found that functional barrier and dysfunctional services triggered consumer post avoidance reactions to newly innovated services. Additionally, Liao et al. concluded that the policy implications of their study are many; including, but not limited to (a) consumer new service avoidance and be reduced or eliminated by adequate strategic resource deployment for employee training in service delivery, and (b) consumer new service avoidance is crucially related to the degree of dysfunctional levels in service innovation.

Quantitative Research on E-Service Service Innovation

Because this current study was a quantitative study on the link between SSI and SSDI, a review of empirical research on e-service innovation was pertinent as attested by the surge of interest in e-service innovation with academic and managerial significance (Chuang & Lin, 2015).

Consequently, business service models driven by the new IT have been dubbed e-services (Chuang & Lin, 2015). Thus, Benaroch and Appari (2011) defined e-service as "the use of new information technologies via the internet to enable, improve, enhance,

transform, or invent a business process or system to complete tasks, solve problems, conduct transactions, or create value for current or potential customers" (p. 534). Consequently, scholarly conceptual and empirical research on e-services began to emerge with emphasis on e-service innovation (Tsou, 2012a, 2012b).

Tsou and Hsu (2011) conducted a theoretical study to deepen understanding of the links among the key antecedents of e-service innovation, innovation performance, and value cocreation with customers within open innovation networks. Overall, the results of Tsou and Hsu's conceptual models suggested important managerial implications, such as an organization-wide perspective for managers to understand e-service innovation and its practical clues.

Second, Tsou and Hsu (2011) identified an integrated framework linking the antecedents of e-service innovation, customers, innovation performance, and open innovation networks. Additionally, Tsou and Hsu stressed the importance of e-service by demonstrating how their conceptual models would allow managers to visually understand the organizational capability development and deployment processes as the infrastructure for e-service innovation, among others things.

Gathering data from 118 IT managers in financial firms in Taiwan, Tsou (2012a) conducted an empirical investigation of the extent to which e-service innovation is driven by the interrelationship between the following variables: (a) collaboration competency, (b) partner match, and (c) knowledge integration mechanisms (KIMs). The data were analyzed with a PLS statistical technique. Interestingly, the outcome of the study

suggested that collaboration competency and partner match related positively to KIMs which, in turn, were positively related to e-service innovation. Beyond that, partner match related positively to collaboration competency.

Additionally, Tsou (2012a) found evidence suggesting that KIMs mediated the relationship between collaboration competency and e-service product innovation. Tsou (2012a) concluded that KIMs were the major mechanism through which collaboration competency positively supported e-service product innovation, and that this finding appears noteworthy for its managerial implications. Second, Tsou (2012a) inferred that the study would assist researchers to understand partner match better as well as its enabling mechanisms to assist e-service innovation. Finally, Tsou (2012a) claimed that the study results offered a crucial direction for e-service product innovation research within the context of e-service innovation adoption.

Tsou (2012b) proposed that service innovation has inevitably been triggered by a number of factors, including, but not limited to (a) dynamic changes in the business environments, (b) heterogeneous customer demands, (c) rapid product life cycles, and (d) advances in IT. With this in mind, Tsou (2012b) clearly stated that his primary research objective was to investigate the mediating effects of internal and external technology integration mechanisms among the following variables: (a) inter-firm codevelopment competency, and (b) the innovation of the e-service process and product. To test his hypothesized model, Tsou (2012b) conducted a field survey involving IT department managers in information service firms in Taiwan.

Consequently, the statistical technique of PLS analyses was used for data analysis. Overall, Tsou (2012b) found that the primary research proposition was supported by the data; namely, the data suggested that firms in the information service industry emphasized inter-firm codevelopment competency in developing e-service innovations, even though they might employ different sets of technology integration mechanisms to leverage e-service product and process innovations.

Finally, at this junction, it can be easily seen that none of the literature reviewed on service innovation, addressed the research gap addressed in the present study. That is, none of the researchers mentioned specifically investigated the hypothesized influence of SSI on SSDI (the dependent variable of the study) using the theoretical underpinning of R-A theory.

Summary and Conclusion

Chapter 2 was a review of the current theoretical and empirical literature on service innovation. The review clearly showed that even though past research has expanded the scholarly knowledge of the variables that are theorized as the drivers of service innovation, none of the reviewed studies specifically investigated whether SSI can predict SSDI, contingent on OS as a moderator. The present study will contribute to the literature by filling this research gap.

Chapter 3 includes a discussion of the research design. This discussion encompasses the research setting, data sampling frame, and the analytical procedures that were used in the study.

Chapter 3: Research Method

Overview

The purpose of this study was to empirically test the relationship between SSI and SSDI, and then examine whether OS moderated the relationship between SSI and SSDI. These empirical tests were conducted to address gaps in the recent research on SSI (Kindstrom et al., 2013; Rusanen et al. 2014; Thaku & Hale, 2013; Verma & Jayasimha, 2014).

The first section of this chapter is a presentation of the research design and rationale. The second section is a discussion of the population as well as the sample and sampling procedures. The third section includes the procedures for recruitment of participants and data collection issues. The fourth section includes instrumentation and operationalization of constructs. Finally, the fifth section is a discussion of the data analysis plan, threats to validity, and a summary.

Setting

The setting for this cross-sectional, nonexperimental survey-based study included a population of U.S. IT managers, for the following reasons. First, service innovations (including e-service innovation) are typically technology-driven (McGee, 2014; Sheppard, 2014). Second, IT firms typically emphasize orientation to service innovation (Shao & Lin, 2016). Finally, the new paradigm shift called the next-big-thing in wearable technologies resonates from IT firms (PricewaterhouseCoopers, 2014).

Research Design

The first step in every research design is problem definition (Creswell, 2014; Singh, 2007). The problem definition allows potential solutions to the problem to be used to dictate the most suitable methodology to employ for the study (Babbie, 2010). With this statement in mind, the purpose of the present study was to be a quantitative investigation of the proposition that OS would moderate the relationship between SSI and SSDI.

Based on the research questions, I determined that the design of the research should identify a sampling frame whereby the key informants within the organizations in the sample could be contacted (Shao & Lin, 2016; Singleton & Straits, 2005). To attain this purpose, I procured a national database of IT managers from Manufacturers' News, which is the United States' oldest and largest compiler and publisher of industrial directories and databases. Thus, I used this sampling frame to randomly select a sample of 500 IT managers from the population of IT managers in the Manufacturers' News database. A cover letter accompanied the questionnaire surveys that were emailed to the 500 randomly selected IT managers using the contact information and other pieces of information elicited from the Manufacturers' News database.

The survey method was used because surveys would enable me to (a) reach a greater number of organizations at a lower cost, (b) to exert less pressure on the respondents for immediate response, and (c) provide the respondents with a greater sense of autonomy (Babbie 2010; Creswell, 2014; Singleton & Straits, 2005). Additionally, in

administering the survey questionnaires, this study followed recommendation to ensure that the key informant (or representative) of each IT organization would be the person who would receive and respond to the survey questionnaire (Bhimani & Langfield-Smith, 2007; Dillman, 2000). Finally, as discussed below, the IT managers in this sample were targeted to receive the questionnaires after I received permission to conduct the study from Walden University's Institutional Review Board (IRB). This was in compliance with the procedures established by the university.

Methodology

50Population

The first step in sampling is to clearly determine the particular collection of units that make up the population of interest to the study. (Singleton & Straits, 2005). By this approach, a sound research approach should start from the top, with the population, and work downward to the sample (Bailey, 1982). To define the target population, the researcher must specify the criteria for determining which units should be included in the population (Singleton & Straits, 2005, p. 115). For the present study, the units included in the population were IT managers as contained in the Standard Industrial Classification Code (SIC) 737 (U.S. Department of Labor, n.d.).

Therefore, the target population was the population of IT managers in the SIC 737. By being a representative sample, it means that the sample of IT managers was a close approximation of key characteristics of IT managers in SIC 737.

Identification of the target population is important if the researcher wants to generalize

the results of the study or extrapolate the findings of the study (Bailey, 1982; Churchill,

1979).

Construction of the sampling frame was the second step in defining the sample for

this study (Bailey, 1982). Therefore, the sampling frame serves to pinpoint the set of

cases from which the sample is drawn. To be exact, the sampling frame is not a sample; it

is the operational definition of the population that provides the basis for sampling

(Singleton & Straits, 2005).

IRB Approval

Prior to sample survey distribution to the participants, the entire research proposal

was submitted to Walden University's IRB for approval. To be exact, conditional to the

dissertation committee approval, the proposal was then submitted to the University's IRB

for approval (IRB number 04-18-17-0387126).

Sampling and Sampling Procedure

For sampling and sampling procedures, this study followed current service

innovation research (Thakur & Hale, 2013) to arrive at the target population of the IT

managers in the SIC 737. Participation in the survey was voluntary, and consent was

implied by respondents' participation in the survey:

1. Participants could refuse to answer any question, and were free to withdraw

   from the study at any time without being penalized in any manner.

2. The study entailed a survey of their perceptions in matters related to the survey questions only. Consequently, as I collected the completed surveys, the data set was coded for statistical identification, thereby allowing the original surveys to be shredded for confidentiality. To assure that the participants were not individually identified, I stored the final data set in the aggregate form.

Finally, the unit of analysis of the study was the IT managers. This clarification was important because the descriptive statistics (sample profile) were focused on the IT managers, not the organizations where they served.

The sample size as well as the response rate derived from a sample, are two important requirements that must be established to assure confidence in the results of the study (Creswell, 2014). Accordingly, in this survey-based quantitative study, attempts were made to follow previous quantitative research on service innovation (Thakur & Hale, 2013) to do the following:

- The sample size should be large enough to yield a response rate equal to or better than those of current quantitative research on service innovation.
- The G*Power sample size software program was used to compute the appropriate robust size sample and the effect size for the study (Faul, Erdfelder, Buchner, & Lang, 2009).

Instrumentation and Operationalization of Constructs

This study was survey-based with structured questionnaires. Published instruments were adopted from current and past peer-reviewed SSI researchers. For this

reason, a brief description provided for each instrument adopted with respect to: (a) the dependent variable, (b) the independent variable, and (c) the moderator or control variable.

The instrument developer(s) as well as the year of publication of each research survey instrument are discussed below.

Dependent Variable Instrumentation

The dependent variable of this study was SSDI, which was operationalized using a 10-item instrument with a 7-point Likert-type scale response format. This instrument was adopted from Verma and Jayasimha (2014; see Appendix A).

Some statistical methodologists (Johnson & Creech, 1983; Zumbo & Zimmerman, 1993) have advanced the argument that when the number of points on a Likert-type scale is five or more (as in the present study), it would be appropriate to treat the operationalization of the dependent variable as continuous metric and then evoke the normal theory to test hypotheses. In this framework, the 10-item, 7-point Likert scale response format for SSDI operationalization implied that the latent SSDI construct was monotonically increasing such that higher numbers on the rating Likert scale captured higher levels of the SSDI latent construct, and vice versa (Johnson & Creech, 1983; Zumbo & Zimmerman, 1993).

Independent Variables Instrumentation

The independent variable of this study was SSI, which was operationalized using scales adopted from Thakur and Hale (2013, p. 1120). Each of the three subcomponents that make up SSI are presented in Figure 4.

As shown in Figure 4, the three subcomponents of SSI were: (a) customer demand (three items). (b) competition (four items), and (c) knowledge-based network (four items). Jointly, the entire SSI instrument is included in Appendix B.
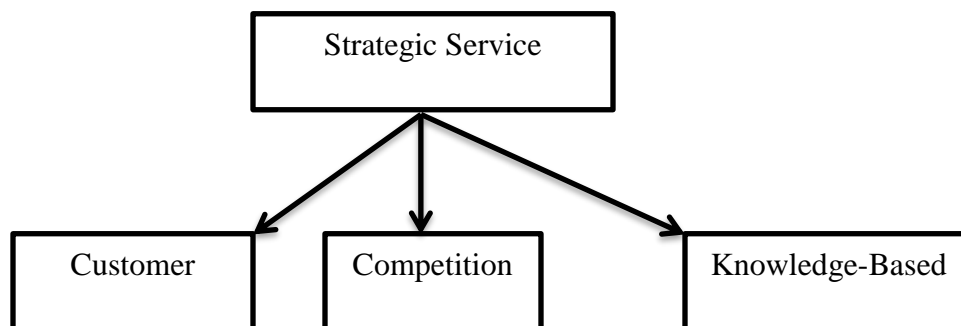
Figure 4. Graphical representation of subcomponents of the independent variable, SSI. From "Service innovation: A comparative study of U.S. and Indian service firms," by R. Thakur and Hale D. Hale, 2013, *Journal of Business Research,* 66, p. 1120.

Finally, given the amount of Likert response data involved in this study, I factor analyzed the dependent variable to mitigate the potential statistical artifacts of multicollinearit. It was methodologically appropriate to factor analyze the entire 11-item SSI and then use the factor scores to replace the raw 11-item Likert data. which is an approach supported by research methodologists across disciplines ~~have~~ (Eyduran, Topal, & Sonmez, 2010; Sakar, Keskin, & Unver, 2011).

OS as Moderator Variable

A moderator variable is an independent variable that impacts the strength and/or the direction of the association between another independent variable and an outcome variable (Baron & Kenny, 1986). In the present study, OS was the independent variable that acted as a moderator variable (see Figure 1), and it was hypothesized to impact the strength and/or the direction of the association between SSI (an independent variable) and SSDI (the outcome variable). For this reason, a moderator variable is also called an effect modifier (Hayes, 2013; Ro, 2012). This assumption was tested under Hypothesis 3, discussed below.

The reason for testing this moderation hypothesis was that research has not unequivocally established the statistical forms in which OS impacts organizational performance irrespective of how organizational performance is specified and operationalized (Leal-Rodriguez et al., 2015). Additionally, the elements that make up OS vary across research, and consequently, the surrogates of OS have encompassed any slack resources that may capture economies of scale (Leal-Rodriguez et al., 2015). These slack resources include all of an organization's resources, turnover, and workforce size. Therefore, in the present study, OS was operationalized as the number of employees in each IT organization in the sample.

Data Analysis and Plan

In this study, all data analyses were performed using SPSS statistical software program. Upon data cleaning to ensure that all cells in the SPSS spreadsheet contained

the desired entries, descriptive statistics were computed. That is, measures of central

tendency (mean, median, etc.) were computed and reported as numbered tables.

Accordingly, it is important to note that the unit of analyses for the study was the IT

managers in the sample as the organizational key informants of the survey.

Following the presentation of the sample profile of the IT managers, factor scores

derived from a principal component factor analysis of SSI were used as the index for the

independent variables of the study. Again, as discussed above, the principal component

factor analysis on SSI was necessitated as an attempt to mitigate the statistical artifact of

multicollinearity in the SSI raw data. It is well-established that multicollinearity will

always cause undesirable "bouncing beta terms" in the regression lines (Cohen, 1978).

Bouncing beta terms is a situation in which the regression slopes erratically swing

into changing from negative to positive, and vice versa (Cohen, 1978). Surely, this

undesirable effect would militate against a researcher's capability to perform robust

statistical estimations (Ro, 2012). The use of factor scores derived from the principal

component factor analysis to replace the original Likert-type raw data was a solution to

multicollinearity (Eyduran et al., 2010; Sakar et al., 2011). With this discussion in focus,

the hypotheses of this study were tested using the framework of Equation 1 as presented

in Chapter 1.

Justification for HMMRA

To fully understand why HMMRA was used for this study, focus must be on the

three variables in this study and the role of each of the variables in the model. First, the

dependent (outcome) variable of the study was SSDI, making it the criterion variable of major interest in the study. Second, the key independent variable of major interest was SSI. Third, the overall empirical question of interest in the study was to quantitatively determine the amount of variable in SSDI explained (accountable for) by SSI. Symbolically, this quantitative question was as follows: SSI → SSDI.

Surely, this quantitative question could easily be addressed in the framework of a simple regression analysis, but there is a catch. The catch is that the influence of SSI on SSDI is moderated by a third variable: OS, symbolically represented as follows:
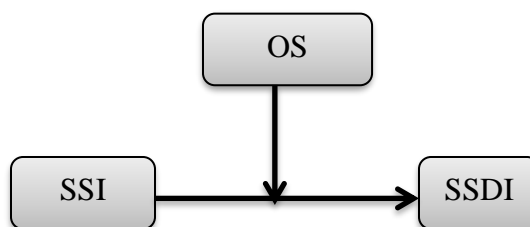
Figure 5. Representation of the influence of SSI on SSDI as moderated by OS.

Simple regression is incapable of handling this latter situation called moderation because the effect of the predictor variable (SSI) on the criterion variable (SSDI) depends on a third variable (OS), called the moderator variable. Interestingly, HMMRA can be used to handle this moderated situation because of the one major capability it has over and above simple regression and multiple regression (Hayes, 2013; Ro, 2012). The major reason was that HMMRA can be used to determine the statistical significance of the joint effects of SSI and OS on SSDI. Beyond this, HMMRA allows the understanding of the statistical significance of SSI and OS individually on SSDI. This information was central to the research objective and hypotheses of this study (Hayes, 2013).

Research Questions

RQ1: Is strategic service innovation (SSI) positively related to strategic service

delivery innovation (SSDI)?

$H_0 1$: Strategic service innovation (SSI) was not positively related to strategic

service delivery innovation (SSDI).

$H_1 1$: Strategic service innovation (SSI) was positively related to strategic

service delivery innovation (SSDI).

RQ2: Is organizational size (OS) positively related to strategic service delivery

innovation (SSDI)?

$H_0 2$: Organizational size (OS) was not positively related to strategic service

delivery innovation (SSDI).

$H_1 2$: Organizational size (OS) was positively related to strategic service

delivery innovation (SSDI).

RQ3: Is organizational size (OS) a moderator of the relationship between strategic

service innovation (SSI) and strategic service delivery innovation (SSDI)?

$H_0 3$: Organizational size (OS) was not a moderator of the relationship

between strategic service innovation (SSI) and strategic service delivery

innovation (SSDI).

$H_1 3_1$: Organizational size (OS) was a moderator of the relationship between

strategic service innovation (SSI) and strategic service delivery innovation

(SSDI).

Statistical Tests for Hypotheses

To address each of the statistical tests conducted on each of the three hypotheses, the following activities were undertaken. First, because Equation 1was the framework for each of three hypotheses tested, Equation 1 was repeated for each of the hypotheses tested. Second, Equation 1 was run in SPSS with the principal component analysis (PCA) factor scores, as discussed above. Then, a test for multicollinearity using collinearity diagnostics was conducted. Once the estimation was made, the variance inflation factor for each of the three variables revealed no multicollinearity because of the strategy of using factor scores derived from the PCA rather than using the raw Likert-type data, as previously discussed.

Third, to reiterate, because the collinearity diagnostics revealed no significant presence of multicollinearity because the raw data on the 11-item SSI were subjected to a PCA. The PCA yielded new uncorrelated variables called *factor scores* that are free from multicollinearity (Eyduran et al., 2010; Sakar et al., 2011). Then, these factor scores were used instead of the raw data to test Hypothesis 1 in the framework of the HMMRA shown in Equation 1 below.

Finally, Hypothesis 1 involved the coefficient b_1 on SSI. If and only if, b_1 was positive with the associated t statistic being substantially large enough to be statistically significant, then and only then, was the null of ($H_0 1$) rejected, so that the alternative hypothesis ($H_1 1$) was then supported. Once the null was rejected, then the alternative hypothesis was retained or accepted. Importantly, even if there was no multicollinearity,

the preceding analysis would have been used to test Hypothesis 1 except that the raw data

would have been used with the potentials of the anticipated problems as discussed above.

$$SSDI = b_0 + b_1 SSI + b_2 OS + b_m(SSI \bullet OS) + e \ (1)$$

where:

SSDI = strategic service delivery innovation (the dependent variable)

b_0 = constant term

SSI = strategic service innovation

b_1 = coefficient on SSI

b_2 = coefficient on OS

b_m = coefficient on the cross-product of SSI & OS (moderation)

e = white noise error term

Hypothesis 2 involved the coefficient b_2 on OS in Equation 1. If and only if, b_2

was positive with the associated *t* statistic being substantially large enough to be

statistically significant, then and only then, was the null of hypothesis ($H_0 2$) rejected so

that the alternative hypothesis ($H_1 2$) was then supported or accepted. Again, because the

null was rejected, the alternative hypothesis was accepted. Again, even if there was no

multicollinearity in the data set, the preceding analysis would still have been performed

to test Hypothesis 2 except that there would have been a potential problem induced by

using the raw data, as previously discussed.

Hypothesis 3 was focused on the coefficient b_m on (SSI*OS) in Equation 1 as the

test of the moderation effect of OS on the relationship between SSI and SSDI. Thus, in

the framework of Equation 1, if and only if, the coefficient denoted as b_m on SSI*OS was positive, such that the associated *t* statistic was large enough to be statistically significant, only then was the null hypothesis ($H_0 3$) rejected. With the null being rejected, the alternative hypothesis ($H_1 3$) was accepted.

Threats to Validity

External Validity

One of the ways that the threats of external validity can arise is through sample selection bias. Sample selection bias occurs when the sample under study does not represent the population from which sample is drawn, meaning the outcome of that study cannot be generalized or extrapolated to that population. That is, when selection bias occurs, it is difficult (if not impossible) to argue that the results of the study can be generalized to the wider population from which the sample was drawn (Bagozzi, 1980; Bagozzi et al., 1991). This discussion applies to all empirical studies and the present study was no exception (Bagozzi, 1980; Bagozzi et al., 1991). However, because the present study was done on a probability sample of IT managers in the United States, potential effects of sample selection bias were mitigated by establishing that the sample was a random draw from the population of IT managers in the United States.

Internal Validity

It has been well established that the concept of internal validity is relevant to studies premised to investigate cause-and-effect relationships (Churchill, 1979; O'Leary-Kelly & Vokurka, 1998). However, as the present study did not address cause-and-effect,

internal validity was not deemed relevant. To reiterate, the present study served to investigate the question: How much of the variations in the dependent variable (SSDI) can be explained by the independent variable (SSI) and the moderator variable (OS), individually and jointly. This way, the three research questions were examined individually.

Build Validity

Schwab (1980) defined construct validity as "representing the correspondence between a construct (conceptual definition of a variable) and the operational procedure to measure or manipulate that construct" (p. 5). By this definition, construct validity indices are many and depend on which one is deemed applicable for any study. As stated above, the measurement instrument used for this study was borrowed from previous, yet current, researchers so that the construct validity of the instruments has been established by those previous researchers.

Ethical Procedures

Ethical consideration in research is a significant concern involving data collection in natural settings where ethical issues are raised as related to human participation (Manita et al., 2011). In the present study, even though there was no data collection issues related directly to personal human subjects, I still followed the ethical standards as set forth by Walden University:

Summary

In response to suggestions to fill research gaps in the current literature on SSI and SSDI, the present study was designed to quantitatively investigate the nature of the relationship between SSDI and SSI. In so doing, the study served to investigate whether OS moderated the relationship between SSDI and SSI by utilizing a quantitative methodology. The major sections of this chapter included the research design and its rationale, research methodology including the population, sampling frame, and the procedure implemented to contact the respondents, instrumentation and construct operationalization, and data analysis strategy including reliability and validity issues.

Chapter 4: Results

The purpose of this quantitative, survey-based, correlational study was to use the conceptual framework of the R-A theory to investigate the relationships between three key variables: SSDI, SSI, and OS. In this framework, the study was aimed to examine the hypothesized influence of SSI on SSDI, contingent on the effect of OS as a moderator variable hypothesized to moderate the effects of SSI on SSDI. To attain this purpose, the study addressed and answered the following research questions and corresponding hypotheses using the framework presented in Equation 1 and Figure 1.

RQ1: Is strategic service innovation (SSI) positively related to strategic service delivery innovation (SSDI)?

$H_0$1: Strategic service innovation (SSI) was not positively related to strategic service delivery innovation (SSDI).

$H_1$1: Strategic service innovation (SSI) was positively related to strategic service delivery innovation (SSDI).

RQ2: Is organizational size (OS) positively related to strategic service delivery innovation (SSDI)?

$H_0$2: Organizational size (OS) was not positively related to strategic service delivery innovation (SSDI).

$H_1$2: Organizational size (OS) was positively related to strategic service delivery innovation (SSDI).

RQ3: Is organizational size (OS) a moderator of the relationship between strategic

service innovation (SSI) and strategic service delivery innovation (SSDI)?

$H_0$3: Organizational size (OS) was not a moderator of the relationship

between strategic service innovation (SSI) and strategic service delivery

innovation (SSDI).

$H_1$3: Organizational size (OS) was a moderator of the relationship between

strategic service innovation (SSI) and strategic service delivery innovation

(SSDI).

Data Collection

The following steps were used to gather data for this study. The first step was to

ensure that an IRB number was obtained for this dissertation In the second step, I

searched for a current sampling frame of IT managers in the United States, and found that

Manufacturer's News had a database containing the sampling frame of IT managers in

the United States. Notably, Manufacturer's News is the United States' oldest and largest

compiler and publisher of industrial directories and databases since 1912 (Manufacturer's

News, Inc., n.d.). Hence, I deemed the Manufacturer's News database adequate as a

sampling frame for the population of IT managers in the United States who were in the

(SIC) 737 (U.S. Department of Labor, n.d.).

The third step in the data collection process was to determine the sample size to

be extracted from this sampling frame. This decision was guided by (a) sample size used

by researchers in service innovation as published in peer-reviewed academic journals,

and (b) the use of sample size computation in G* Power software program version 4.0

(Faul et al., 2009). With respect to the latter, Table 1 includes the sample size

computation results using G* Power software.

Table 1

Sample Size Computation Results Using G Power 4.0*

F test for linear multiple regression: Fixed model, R^2			
Analysis: A priori: Compute required sample size			
Input parameters		Output parameters	
Effect size	0.15	Noncentrality parameter	22.95
A err prob.	0.05	Critical F	2.0
Power (1 – err prob.)	0.95	Numerator df	7
Number of tested predictors	5	Denominator df	145
Total number of predictors	5	Total sample size	153
		Actual power	0.95

As shown in Table 1, the input parameters put into G* Power yielded the output

parameters The total sample size suggested required was 153 with actual power of 0.95.

However, I chose a sample size of 250 to ensure enough data were collected.

Next, I compared this sample size of 250 with sample sizes of current research on

service innovation published by scholars in peer-reviewed academic journals. I found that

a sample size of 250 for this study was far greater than the sample size used by other

researchers in service innovation research. For example, Thakur and Hale (2013) used a

sample size of 169 in a study involving U.S. IT managers.

The next step in the data collection process entailed how to contact the IT managers already identified in the sampling frame. The IRB office gave me approval to forward my questionnaires for data collection to QuestionPro. However, before forwarding my questionnaires to QuestionPro. I randomly selected 1,000 IT managers from a population of 2,597 IT managers from the Manufacturer's News database. It is important to note that this random sample of 1,000 IT managers doubles the 500 IT managers used in current service innovation research published in peer-reviewed academic journal (Verma & Jayasimha, 2014).

I received a total of 350 completed questionnaire responses from Question Pro on November 29, 2017. However, of the 350 completed questionnaire responses, 100 had errors and omissions. Finally, the study was conducted on 250 completed questionnaires. This resulted in a response rate of 25% (250/1000). The descriptive statistics of the study are presented in the following section.

Demographic Variables

Sex

Sex was coded into three categories such that male = 1, female = 2, and prefer not to answer = 3. The results are presented in Table 2.

Table 2

Demographic Variable: Sex

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1.00	134	67.0	67.0	67.0
	2.00	61	30.5	30.5	97.5

3.00	5	2.5	2.5	100.0
Total	200	100.0	100.0	

Race

Race was coded into six categories such that Caucasian = 1, Latino = 2, African American = 3, Native American = 4, Asian Pacific Islander = 5, and other = 6. The results are presented in Table 3.

Table 3

Demographic Variable: Race

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1.00	51	25.5	25.5	25.5
	2.00	26	13.0	13.0	38.5
	3.00	48	24.0	24.0	62.5
	4.00	26	13.0	13.0	75.5
	5.00	20	10.0	10.0	85.5
	6.00	29	14.5	14.5	100.0
	Total	200	100.0	100.0	

Age Groups

There were five age groups that were coded as follows: 18–24 = 1, 25–34 = 2, 35–44 = 3, 45–54 = 4, and 55 and older = 5. The results are shown in Table 4.

Table 4

Demographic Variables: Age Groups

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1.00	51	25.5	25.5	25.5

2.00	87	43.5	43.5	69.0
3.00	50	25.0	25.0	94.0
4.00	12	6.0	6.0	100.0
Total	200	100.0	100.0	

Education

Levels of education were broken into eight categories as follows: 1 = High school diploma/GED, 2 = Trade technical/vocational, 3 = Bachelor's degree, 4 = Professional degree, 5 = Some college no degree, 6 = Associate degree, 7 = Master's degree, and 8 = doctorate. The results are presented in Table 5.

Table 5

Demographic Variable: Education

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1.00	67	33.5	33.5	33.5
	2.00	53	26.5	26.5	60.0
	3.00	22	11.0	11.0	71.0
	4.00	18	9.0	9.0	80.0
	5.00	10	5.0	5.0	85.0
	6.00	10	5.0	5.0	90.0
	7.00	10	5.0	5.0	95.0
	8.00	10	5.0	5.0	100.0
	Total	200	100.0	100.0	

Marital Status

Marital status was broken into five categories as follows: 1 = Single, 2 = Divorced, 3 = Married/Domestic Partner, 4 = Separated, and 5 = Widowed. The results are presented in Table 6.

Table 6

Demographic Variable: Marital Status

		Frequency	Percent	Valid percent	Cumulative percent
Valid	1.00	46	23.0	23.0	23.0
	2.00	48	24.0	24.0	47.0
	3.00	48	24.0	24.0	71.0
	4.00	39	19.5	19.5	90.5
	5.00	19	9.5	9.5	100.0
	Total	200	100.0	100.0	

Next, I computed the descriptive statistics of the dependent variable (SSDI). The mean score of each IT manager on SSDI was calculated and labeled SSDIxba in Table 7. This process was comparable with the descriptive statistics computed in a similar study (Verma & Jayasimha, 2014).

Table 7

Descriptive Statistics for SSDI

	N	Minimum	Maximum	Mean	Std. deviation
SSDI	250	2.20	7.0	5.75	1.21
Valid N	250				

I then computed the descriptive statistics of the independent variable (SSI) on the three subcomponents of the independent variable as follows: (a) customer demand (three items), (b) competition (four items), and (c) knowledge-based network (four items). I first computed the mean of each IT manager's score on each of the three subcomponents ~~in order~~ to compute the descriptive statistics reported in Table 8.

Table 8

Descriptive Statistics for SSI

	N	Minimum	Maximum	Mean	Std. deviation
CD	250	1.33	7	5.69	1.7
COMP	250	1.75	7	5.72	1.32
KBN	250	2.50	7	5.76	1.28
Valid *N*	250				

Note. CD: customer demand; COMP: competition; KBN: knowledge-based network.

Finally, I computed the descriptive statistics of the moderator variable (OS) as shown in Table 9.

Table 9

Descriptive Statistics for OS

	N	Minimum	Maximum	Mean	Std. deviation
SSDI	250	1	7.0	6.40	0.89
Valid N	250				

Principal Component Factor Analysis

As discussed in Chapter 3, it was important to first determine empirically the number of subdimensions that characterized the data on the three subcomponents of the

independent variable; namely (a) customer demand (three items), (b) competition (four items), and (c) knowledge-based network (four items). I did this to mitigate the potential effects of multicollinearity in multiple regression analysis conducted on the next step. Specifically, I conducted PCA for the primary reason that the Likert-type raw data used to measure the independent variable was replaced with the factor scores derived from the PCA. I used these factor (component) scores that were free from multicollinearity artifacts in the HMMRA I performed to test the hypotheses of the study (see Eyduran et al., 2010; see Sakar et al., 2011).

Finally, prior to conducting the PCA, the Kaiser-Meyer-Olkin measure of sampling adequacy (0.776) and Bartlett's test of sphericity ($X^2 = 1541.44/55$, $p < 0.001$) suggested that the Likert-type data set for the PCA was not an identity matrix; therefore, the data set was subjected to a PCA (Field, 2013). The statistics supporting the adequacy of the data for the PCA are presented in Table 10.

Table 10

Kaiser-Meyer-Olkin and Bartlett's Test

Procedure	Outcome
Kaiser-Meyer-Olkin measure of sampling adequacy	.775
Bartlett's test of sphericity approx. chi-square	1541.440
Df	55
Sig.	.000

It has been well-established that PCA results are always massive (Dinev & Hart, 2004; Fields, 2013; Matheson, Rimmer, & Tinsley, 2014).). For this reason, only a

summary of the PCA computer outputs results are reported in scholarly peer-reviewed academic journals (see Dinev & Hart, 2004; Matheson et al., 2014). HoweverI chose to report the entire PCA results as follows.

As can be seen in Table 11, the cummunalities of the PCA were typical in the literature (Dinev & Hart, 2004; Matheson et al., 2014). The PCA extraction was similar, with the smallest loading less than 0.5 suppressed as typically done in the literature (Dinev & Hart, 2004; Matheson et al., 2014). Following the PCA extraction results in Table 11, Table 12 includes details of the factorial solution of the PCA. As seen in Table 12, using the criteria of a varimax rotation and Eigenvalue greater than 1.00, a three-factor solution explained 74.44 % of the variance in the SSI data set ($\alpha = .83$), as evidenced in the rotated component matrix.

The scree plot is one of the accepted procedures to substantiate the number of factorial components in a PCA (Dinev & Hart, 2004; Matheson et al., 2014). Thus, the scree plot of the three-factor solution of the PCA is presented in Figure 6.

Table 11

Communalities of the PCA

	Initial	Extraction
CD1	1	.734
CD2	1	.854
CD3	1	.729
COMP1	1	.615
COMP2	1	.754
COMP3	1	.744

COMP4	1	.852
KBN1	1	.858
KBN2	1	.656
KBN3	1	.677
KBN4	1	.721

Note. CD: customer demand; COMP: competition; KBN: knowledge-based network.

Table 12

Total Variance Explained

Component	Total	% of variance	Cumulative	Total	% of variance	Cumulative
1	4.303	39.12	39.12	4.303	39.121	39.121
2	2.215	20.13	59.25	2.215	20.136	59.25
3	1.67	15.18	74.44	1.67	15.18	74.44
4	0.54	4.97	79.41			
5	0.531	4.83	84.24			
6	0.450	4.09	88.33			
7	0.385	3.50	91.83			
8	0.297	2.21	96.75			
9	0.244	2.21	96.75			
10	0.198	1.80	98.55			
11	0.159	1.44	100.00			

As seen in Figure 6, the elbow of the scree plot of the PCA showed a distinct and clear break at the three-factor point, confirming that the Likert-type scale items for the SSI data set has a three-factor solution.
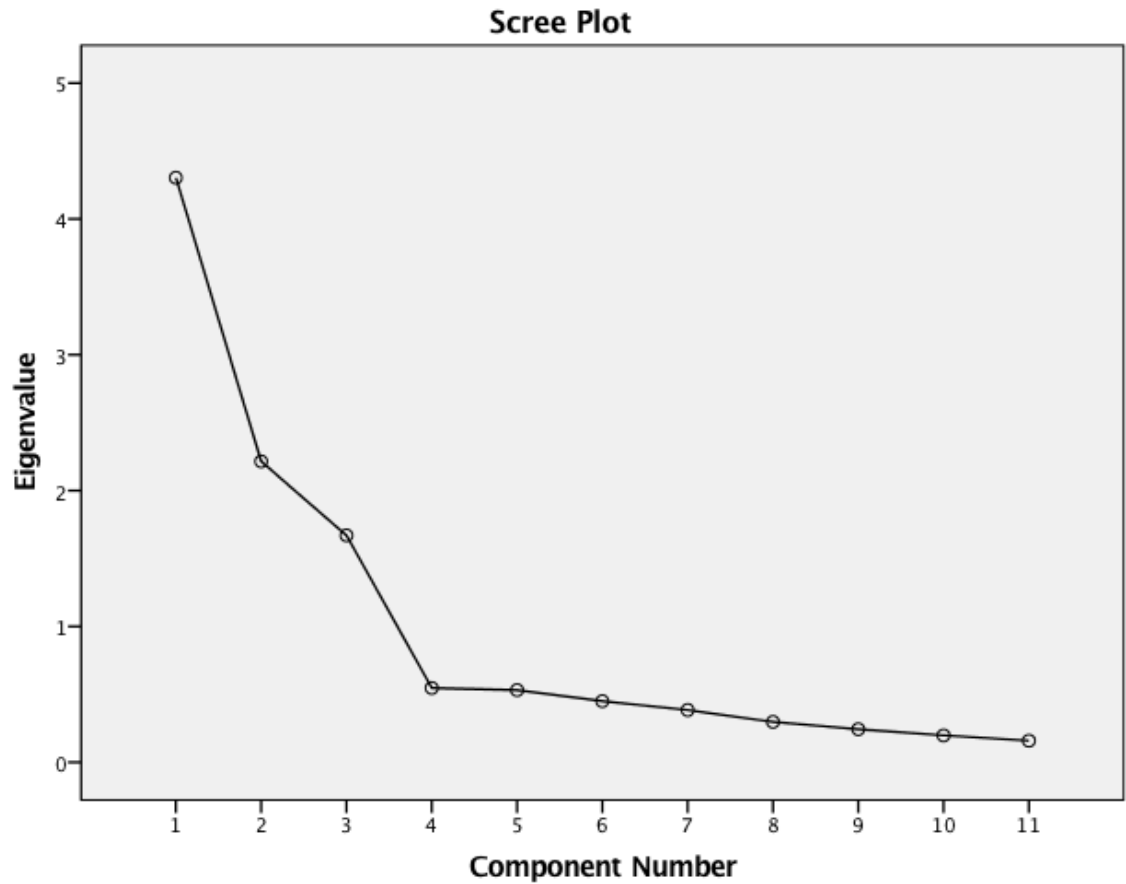
Figure 6. Scree plot of the PCA.

With this empirical evidence in view, examination of the research questions and the

hypotheses of the study follows.

RQ1 and Hypothesis 1

Hypothesis 1 involved a test of the proposition that SSI is positively related to

SSDI. In other word 3s, this called for a quantitative test of how much of the variance in

SSDI is explained (accounted for) by SSI, and a test of whether this variance was

positive. Therefore, a regression of SSI on SSDI in SPSS in the framework of Equation 3

is presented as Table 13. The results of Hypothesis 1 are as follows:

$$SSDI = b_0 + b_1SSI + e \quad (2)$$

where:

SSDI = strategic service delivery innovation (the dependent variable)

b_0 = constant term

SSI = strategic service innovation

b_1 = coefficient on SSI

e = white noise error term

The result of this test of Hypothesis 1 is presented in Table 13.

Table 13

Test Results for Hypothesis 1

Model 1	Sum of squares	*df*	Mean square	*F*	Significance
Regression	307.491	3	102.497	428.15	.000
Residual	58.89	246	0.239		
Total	366.38	249			

Note. $R^2 = 0.84$; Adjusted $R^2 = 0.83$; Dependent variable: SSDI; Predictor: (Constant) regression factor scores 1 to 3

The empirical evidence in Table 13 strongly suggested the null hypothesis that SSI was not positively related to SSDI was rejected. Hence, the alternative hypothesis that SSI was positively related to SSDI ($p < .001$; Adjusted R-Square $= .83$), was accepted. Overall, the model explained 83% of the variance in SSDI (R-Square $= .83$). Importantly, it is understandable that the SPSS statistical package recognized the three factor scores as predictor variables plus the constant term. As such, an F test was reported

in Table 13, instead of a *t* test. Either way, the conclusive evidence remains that SSI had a statistically significant positive influence on SSDI.

Research Question 2 and Hypothesis 2

Hypothesis 2 involved a test of the proposition that OS is positively related to SSDI. In other words, this hypothesis called for a quantitative test of how much of the variance in SSDI is explained (accounted for) by OS, and tested whether this variance accounted for was positive. Therefore, I conducted a regression of OS on SSDI in SPSS in the framework of Equation 4 shown below.

$$SSDI = b_0 + b_1OS + e \quad (3)$$

where:

SSDI = strategic service delivery innovation (the dependent variable)

b_0 = constant term

OS = organizational size

b_1 = coefficient on OS

e = white noise error term

The empirical evidence in Table 14 appears to strongly suggest the null hypothesis that OS was not positively related to SSDI, was resoundingly rejected in favor of the alternative hypothesis that OS was positively related to SSDI (t = 10.4, p < .001). The beta (.551) about 55% of the variance in SSDI was accounted for by OS alone. Of course, the 55% must be positive to explain the variance in SSDI. Again, with this empirical

evidence, the null hypothesis that OS was not positively related to SSDI was rejected.

Hence, the alternative hypothesis that OS was positively related to SSDI was retained.

Table 14

Test Results for Hypothesis 2

	Unstandardized coefficients		Standardized coefficients	t	Significance
	B	Std. error	beta		
Constant	.956	.46		2.1	.04
OS	.750	.07	.55	10.40	.000
		Collinearity statistics			
		Variance inflation factor (VIF)	Tolerance		
Factor score 1		1.00	1.00		
Factor score 2		1.00	1.00		
Factor score 3		1.00	1.00		

Note. Dependent variable: SSDI; Predictor variable: (Constant) OS

Research Question 3 and Hypothesis 3

Hypothesis 3 involved an empirical test of the proposition that OS moderated the

relationship between SSI and SSDI. Statistically, this test is tantamount to a test of the

statistical significance of the interaction term (SSI*OS) between SSI and OS on SSDI.

Specifically, a statistical test of the proposed moderation effect was focused on the

moderation term on the influence of SSI on the relationship between OS and SSDI, and

that was evidence suggesting that moderation was statistically significant in this study.

The empirical evidence presented in Table 15 appears to strongly suggested the

null hypothesis that OS did not moderate the relationship between strategic SSI and SSDI

was rejected. Hence, this empirical evidence pointed to retaining the alternative

hypothesis that OS moderated the relationship between SSI and SSDI.

Table 15

Test Results for Hypothesis 3: Moderation Test

Model	R	R^2	Adjusted R^2	Std. error estimate
1	0.916	.844	.837	.49
2	.919	.843	.843	.48

		Change statistics			
	R^2 change	F change	DF1	DF2	Sig. F change
1	.839	428.153	3	246	.000
2	.006	7.630	1	245	.000

Note. Durbin-Watson = 2.010; Dependent variable: SSDI; Model 1 predictor variables: (Constant) factor scores 1 to 3; Model 2 predictor variables: (Constant) factor scores 1 to 3, OS

Technically stated, I conducted a two-step sequential HMMRA to answer RQ3

and test Hypothesis 3 in the framework of the SPSS statistical software program. The

two-step sequential HMMRA involved two models (Model 1 & Model 2), as shown in

Table 15. Notably, in the literature Model 1 and Model 2 are similarly called Block 1 and

Block 2, respectively (Field, 2013; Hayes, 2013). I made this clarification to obviate any

confusion in statistical language rampantly used in the empirical literature.

The results of Hypothesis 3 reported Table 15 involved the following quantitative

question: What was the computed R^2 change by moving from Model 1 to Model 2?

Second, was this R^2 change statistically significant or not? As can be observed in Table

15, the R^2 change computed by moving from Model 1 to Model 2 was .006. This R^2

change of .006 was associated only with the entry of OS in the model (see Table 15).

Surely, even though this R^2 change may appear small in magnitude, it was highly

statistically significant at the best conventional levels (p < .001).

Therefore, based on this resounding empirical evidence, the null hypothesis that

OS did not moderate the relationship between SSI and SSDI was rejected. A rejection of

the null hypothesis suggested the acceptance of the alternative hypothesis that OS

moderated the relationship between SSI and SSDI. Finally, I examined the assumptions

underlying the use of multiple regression analysis as discussed in the following section.

Assumptions of Multiple Regression Analysis

Examination of Influential Outliers

I examined the data set for the presence of any influential outliers. Interesting, I

found no influential outliers among the values of the variables in the regression analysis

for either the dependent variable (SSDI) or the independent variables (SSI), as well as the

moderator variable (OS).

Evaluation of Residuals for Normality

The literature indicates that only the observed residual (not the unobserved errors)

should be examined to make sure that it is normally distributed (Field, 2013; Francis,

2013). To this end, I used SPSS to examine the extent of normality of the residuals. I

checked for the normality of residuals in framework of a p-p plot of standardized

residuals as well as a histogram (Field, 2013; Francis, 2013). The results are presented in

Figures 7 and 8.

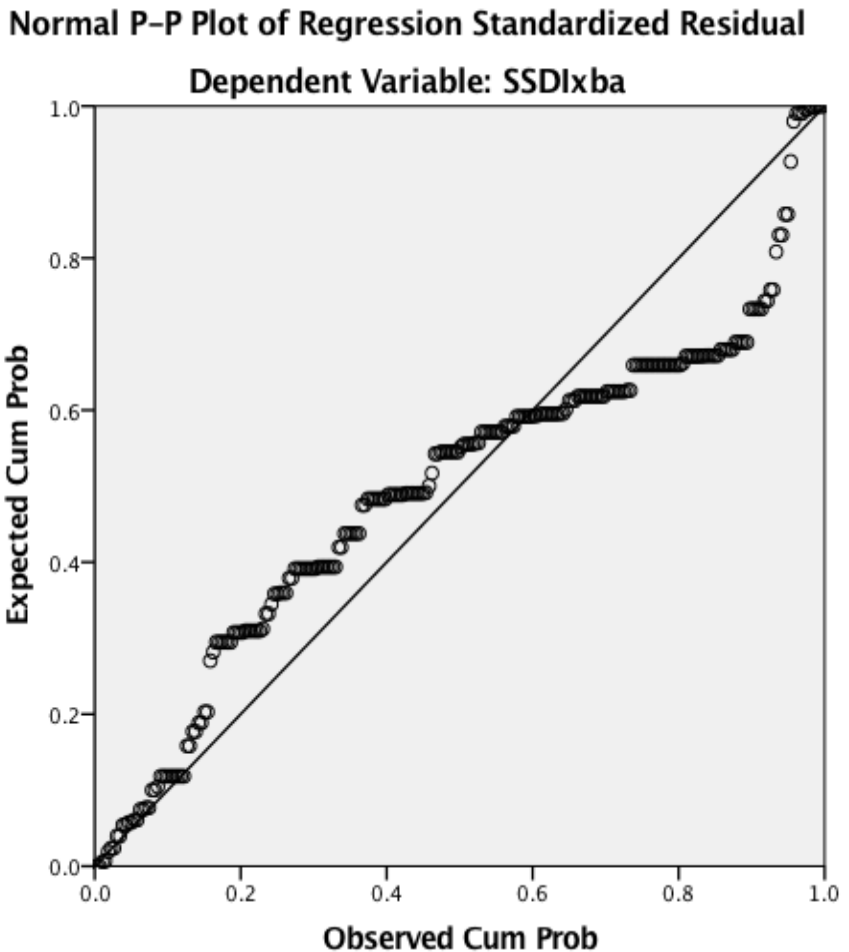**Normal P–P Plot of Regression Standardized Residual**

Figure 7. Normal p-p plot of regression standardized residual of the dependent variable (strategic service delivery innovation, abbreviated as SSDIxba).

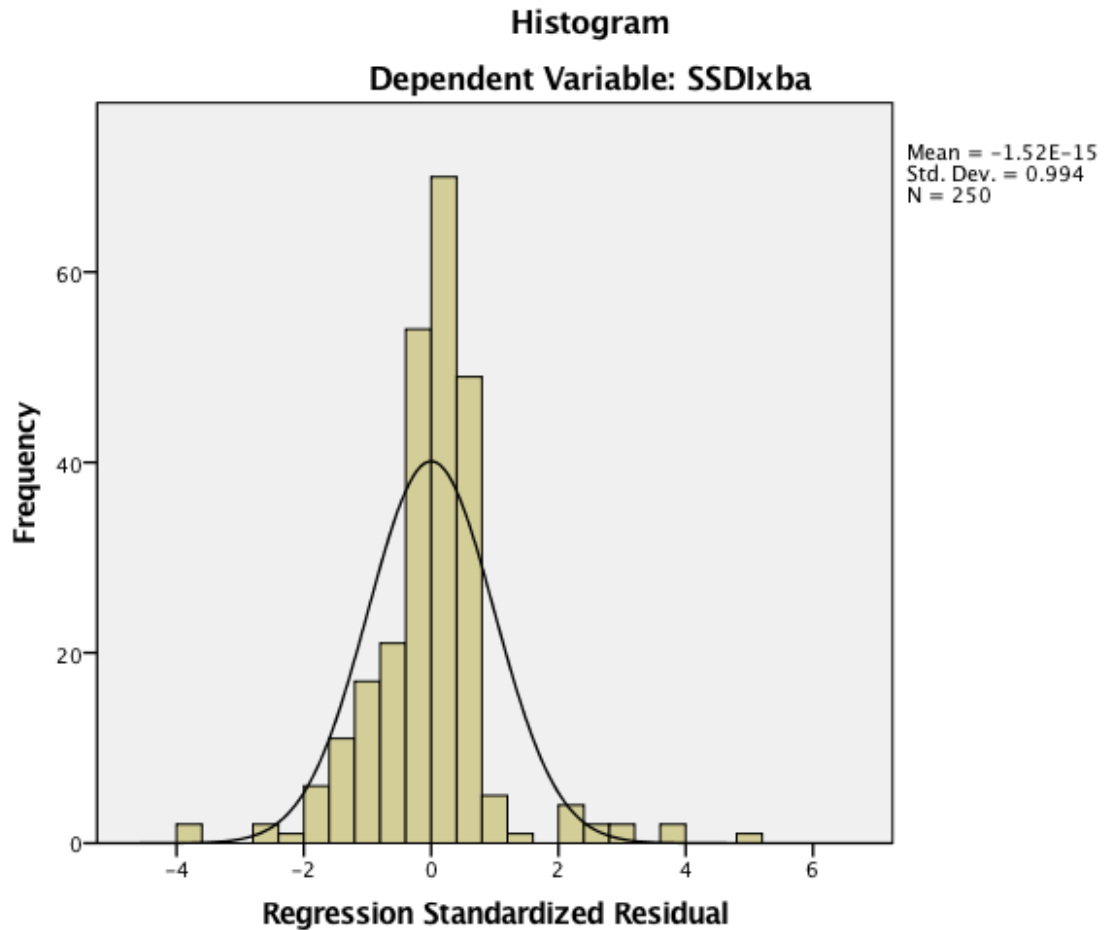Likewise, the histogram of the dependent variable is shown in Figure 8.

Figure 8. Histogram of dependent variable, SSDIxba.

As can be observed, the normal p-p plot of regression standardized residual of the dependent variable as well as the accompanying histogram suggested no serious departure from normality. In other words, the degree of nonnormality was not serious enough to cast doubt on the regression coefficients of the multiple regression estimations conducted for this study. It is interesting to note that multiple regression is robust to a fairly large sample size as used in the study (Lin, Lucas, & Shmueli, 2013).

Hence, confidence in the results of the study was enhanced. Additionally, no

slight violation of normality was deemed serious enough to undermine the multiple

regression results of this study. As such, it seemed unnecessary to attempt any form of

data transformation of the data set to normality (Field, 2013). Evidently, log and square

root transformations commonly used in the literature could have been used if it was

necessary to transform the data set, but it was not necessary do so (Francis, 2013).

Multicollinearity

On checking for multicollinearity, I found evidence that multicollinearity was

absent in the study as confirmed by the SPSS output on the VIF and tolerance statistics

shown in Table 14 ("Collinearity statistics"). Both the tolerance tests and VIF test were

within the acceptable range (Field, 2013).

With respect to the acceptable range of the VIF and the tolerance statistics, I

followed suggestions by experts that if the largest VIF is greater than 10, this would have

indicated that multicollinearity was a problem in the study (Field, 2013, p. 325).

Empirical evidence in Table 14 ("Collinearity statistics") indicated that the largest VIF

was 1.00. Additionally, experts suggest that tolerance below 0.1 would indicate that there

was concern for multicollinearity in the study (Field, 2013, p. 325). In the present study,

the tolerance was 1.00, corresponding to the reciprocal of the VIF to be 1.00 (Field, 2013,

p. 325). Finally, it must be mentioned that the absence of multicollinearity in the data set

must be ascribed to the strategy of replacing the raw Likert-type data with their factor

scores derived from the PCA analysis conducted as explained earlier.

Durbin-Watson Test of Autocorrelation

The problem of autocorrelation arises primarily in time series data, which was not the case in this study (Francis, 2013). As shown in Table 15, the computed Durbin-Watson coefficient was 2.010. Specifically, this computed statistic was a test of whether there was serial correlation between errors in the regression model. Technically, it tested whether adjacent residuals (observed residuals) were correlated as they captured the behaviors of the unobserved regression errors. That was, of course, a test of the assumption of independent errors.

Statistically, the Durbin-Watson test statistics lay in the range of 0–4. Specifically, a value of 2 suggested that the residuals were uncorrelated; while a value greater than 2 would mean the adjacent residuals were negatively correlated. A value below 2 would indicate that adjacent residuals were positively correlated. As shown in Table 15 ("Change statistics"), the value of adjacent residuals for the study was 2.010 as captured by the Durbin-Watson statistic. Therefore, this empirical evidence suggested that there was no evidence of autocorrelation dictated in the data set for the study.

Summary

In summary, this study was an examination of three key research questions:

RQ1: Is strategic service innovation (SSI) positively related to strategic service delivery innovation (SSDI)?

RQ2: Is organizational size (OS) positively related to strategic service delivery innovation (SSDI)?

RQ3: Is organizational size (OS) a moderator of the relationship between strategic

service innovation (SSI) and strategic service delivery innovation (SSDI)?

I found empirical evidence suggesting that SSI was positively related to SSDI. Likewise,

I found empirical evidence indicating that OS was positively related to SSDI. Finally, I

found statistically significant empirical evidence suggesting that OS moderated the

relationship between SSI and SSDI. Notably, the empirical evidence presented in this

chapter will inform the forthcoming discussion, conclusions, and recommendations for

Chapter 5.

Chapter 5: Discussion, Conclusions, and Recommendations

For several decades, scholarly research on service innovation has not progressed

(Aas & Pedersen, 2014). Consequently, significant research gaps still exist in the current

understanding of service innovation (Droege et al., 2009; Aas & Pedersen, 2010). For

example, despite the growing literature on service innovation, there is a lack of empirical

research measuring its impact on a firm level (Durst et al., 2015, p. 1). Therefore, the

current study was conducted to address this research gap.

The purpose of this study was to use the R-A theory to investigate empirically

whether OS moderated the relationship between SSI and SSDI. Specifically, I centered

the research study on an empirical investigation of the relationships between three key

variable namely, SSI, SSDI, and OS in an attempt to make a contribution to the literature

in service innovation research.

Concise Summary of Key Research Findings

This section includes a concise summary of the key findings of the study using the framework of the following three research questions and hypotheses.

RQ1: Is strategic service innovation (SSI) positively related to strategic service delivery innovation (SSDI)?

$H_0$1: Strategic service innovation (SSI) was not positively related to strategic service delivery innovation (SSDI).

$H_1$1: Strategic service innovation (SSI) was positively related to strategic service delivery innovation (SSDI).

RQ2: Is organizational size (OS) positively related to strategic service delivery innovation (SSDI)?

$H_0$2: Organizational size (OS) was not positively related to strategic service delivery innovation (SSDI).

$H_1$2: Organizational size (OS) was positively related to strategic service delivery innovation (SSDI).

RQ3: Is organizational size (OS) a moderator of the relationship between strategic service innovation (SSI) and strategic service delivery innovation (SSDI)?

$H_0$3: Organizational size (OS) was not a moderator of the relationship between strategic service innovation (SSI) and strategic service delivery innovation (SSDI).

$H_1$3: Organizational size (OS) was a moderator of the relationship between strategic service innovation (SSI) and strategic service delivery innovation (SSDI).

First, I found strong empirical evidence suggesting the null hypothesis that SSI was not positively related to SSDI should be rejected at the conventional levels of statistical significance, $F (3, 246) = 428.153$, $p < 0.001$. Thus, rejection of the null hypothesis that SSI was not positively related to SSDI, meant acceptance of the alternative hypothesis that SSI was positively related to SSDI.

Second, I found empirical evidence suggesting the null hypothesis that OS was not positively related to SSDI, was rejected in favor of the alternative hypothesis that OS was positively related to SSDI ($t = 10.4$, $p < 0.001$). In terms of the beta statistic, computed beta (.551) of the model suggested that about 55% of the variance in SSDI was accounted for by OS. Because the 55% must be positive to explain the variance in SSDI, the null hypothesis that OS was not positively related to SSDI was rejected. Therefore, the alternative hypothesis that OS was positively related to SSDI was retained.

Turning to the third and final hypothesis, I found empirical evidence suggesting the null hypothesis that OS did not moderate the relationship between SSI and SSDI was rejected because the R^2 change associated with the entry of OS into the model was statistically significant at the conventional levels, $F (1, 245) = 0.005$, $p = 0.006$. Hence, this empirical evidence pointed to retaining the alternative hypothesis that OS moderated the relationship between SSI and SSDI. Cognizant of these three key findings of this

study, the next thing was to examine the ways the findings of this study confirmed, disconfirmed, or extended knowledge in the discipline by comparing them with what has been found in the peer-reviewed literature discussed in Chapter 2.

To summarize, using the conceptual lenses of R-A theory, the major purpose of the study was centered on one key empirical question: Did OS moderate the relationship between SSI and SSDI, conditional on the relationship between OS and SSDI and the relationship between SSI and SSDI being positive? This, research question resulted in the three hypotheses tested in this study.

Comparison with Other Studies in Peer-Reviewed Literature

Scholars have established that comparing and contrasting results with those from similar studies promote cumulative literature for theory building and further research (Churchill, 1979). In line with this statement, scholars in service innovation have established that empirical research on service innovation is lacking (Durst et al., 2015). The findings of the present study either disconfirmed or confirmed the empirical research on service innovation.

Comparable to the present study, Verma and Jayasimha's (2014) conducted a study on the moderating role of customer orientation on service innovation delivery as an organizational performance. Their results suggested that customer orientation moderated the empirical relationship between service delivery strategy and organizational performance (Verma & Jayasimha, 2014). The present study results support the findings of Verma and Jayasimha. As in the present study, the managerial significance of Verma

and Jayasimha's study suggested a contribution to strategic planning of service firms on resource allocation toward sustainable performance in strategic service innovation delivery. Because the current study confirms the findings of Verma and Jayasimh, the present study extends the knowledge in service innovation of strategic service marketing discipline.

Kindstrom et al. (2013) used a case-based study theoretically underpinned in dynamic capabilities to examine the extent service innovation supported by the management of the dynamic capabilities involving the subcomponents of sensing, seizing, and reconfiguration in dynamic capabilities for service innovation. Even though Kindstrom et al. never tested moderation theory, their study indicated that service innovation was impacted by the management of dynamic capabilities.

Kindstrom et al. argued that managers should understand the need for product-centric firms to compete by adding services components to their product portfolios. In addition, Kindstrom et al. argued that addition of service components to organizational product portfolios would require a greater focus on service innovation in support of the assumption that a major challenge associated with the shift from product centeredness to a product-and-service orientation is the management of the dynamic capabilities of sensing, seizing, and reconfiguring were needed for service innovation. Sharma et al. (2014) also found support that noted organizational capabilities are the pillar for the service innovation. However, they did not directly investigate the moderation effect of the OS

Sharma et al. (2014) used the conceptual platform of dynamic capability on customer cocreation in service innovation to qualitatively identify organizational capabilities that supported customer participation in health care service innovations in Australia. Even though they did not test moderation proposition directly, Sharma et al. found that four categories of organizational capabilities were relevant to service innovation in the health care industry, including customer activation, organizational activation, interaction capabilities, and learning agility.

Additionally, Sharma et al. found evidence suggesting that even though managers acknowledge the need for these capabilities in service innovation, most health care organizations understood that they had not developed the required skills and resources to strategically deploy them for competitive advantage in service innovation. Thus, Sharma et al. provided an insight into the organizational capabilities managers should deploy to improve their customer participation to strategically co-create in service innovation .

Hu et al. (2012) tested mediation theory, which was closely related to the moderation hypothesis tested in the present study. They theorized and empirically tested the link between the proposition that knowledge sharing is a critical resource because it promotes service innovation, and service innovation promotes organizational competitive advantage and performance (Hu et al., 2012). Specifically, Hu et al. found that the relationship between service innovation and knowledge sharing was mediated by the quality shared knowledge.

However, other variables Hu et al. (2012) hypothesized as mediator variables between knowledge sharing and service innovation were not statistically significant at the conventional levels of statistical tests. Hu et al. used a case study research approach with a large sample of 466 participants to investigate the relationship between service innovation and knowledge sharing, and other variables they hypothesized as mediators variables between knowledge sharing and service innovation. They argued that the reciprocal principle suggests that more knowledge sharing promotes relationships among team members and between superiors and subordinates, contingent on the quality of the knowledge shared being of high quality (Hu et al., 2012). Overall, the present study findings suggesting the presence of mediation corroborated Hu et al.'s findings with respect only to moderation; although moderation theory is not exactly the same concept as moderation, they are closely related (Hayes, 2013).

In conclusion, a brief summary of the other findings by Hu et al. (2012) are worthy of mention. First, Hu et al. found the improvements in team service innovation could promote the competitiveness of organizations in the service industry, by inference. Second, a high level of trust among superiors, subordinates, and team members would make them more willing to share valuable and useful knowledge. Thus, the greater the quality of information shared, the more the impact of knowledge sharing on organizational innovation. Third, leader–member shared knowledge and team–member shared knowledge mediated the relationship between knowledge sharing and service innovation, and trust moderated the relationship between knowledge sharing and both

leader–member shared knowledge and team–member shared knowledge. Interestingly, Hu et al.'s finding that trust moderated the relationship between knowledge sharing and both leader–member shared knowledge and team–member shared knowledge is closely related to the finding in the present study that OS moderated the relationship between SSI and SSDI.

Finally, Tsou (2012a) was another study underpinned on an empirical test of mediation theory, specifically in the area of e-service innovation. Briefly, Tsou conducted an empirical investigation of the extent to which e-service innovation is driven by the interrelationship between the following variables: (a) collaboration competency, (b) partner match, and (c) KIMs. Tsou (2012a) collected data form from 118 IT managers in financial firms in Taiwan. The data were analyzed with the PLS statistical technique. Interestingly, the outcome of the study suggested that collaboration competency and partner match related positively to KIMs which, in turn, were positively related to e-service innovation. Beyond that, partner match related positively to collaboration competency. Pertinently, Tsou (2012a) found evidence suggesting that KIMs mediated the relationship between collaboration competency and e-service component of product innovation.

Tsou (2012a) concluded that KIMs were the major mechanism through which collaboration competency positively supported e-service service innovation component of product innovation, and that this finding appears noteworthy for its managerial implications. Additionally, Tsou (2012a) inferred that the study would assist researchers

to better understand partner match as well as its enabling mechanisms to assist e-service innovation. Finally, Tsou (2012a) claimed to have broken new ground that promised to offer a crucial direction for e-service component of service innovations within the context of e-service innovation research.

Limitations of the Study

As with any other empirical (quantitative) studies, this study had some understandable limitations that could be addressed in future studies by modifying the research design and objectives as appropriate. For one thing, this study followed the extant literature on service innovation to use a cross-sectional research design. I made this choice even though a longitudinal design would have been superior to cross-sectional studies as the latter is focused on examining what happens only at one point at a time. On the other hand, longitudinal design studies are used to examine what happens in several points in time. This way, trajectories of the changes in the underlying phenomena under investigation would be investigated and understood better. Again, I did not use a longitudinal design in this study. Hence, the degree to which longitudinal research design is richer in information content than is cross-sectional design implies a limitation of the study.

Likewise, data on service innovation were extracted using respondents' (IT managers) perceptual ratings on a Likert-type scale. Understandably, to the degree perceptions are subjective belief that are not as reliable as metric data, this suggests a limitation of the present study. Specifically, it is well-known that metric data are always

preferable, in terms of the superiority of information elicited. Another unavoidable research design limitation for this study related to the fact that if I had conducted this study with another population of IT managers a country other than the United States, the outcome and conclusion might be different. That difference could be ascribed to differences in geographic locations, administrative structures, OS, and so on. Evidently, this latter limitation would suggest a replication of the study in other countries as future research.

Finally, it may be pertinent to mention that I encountered some challenges with respect to the survey research design used to gather data from the population of IT managers in the United States. For example, Creswell (2003) argued, "Additional strengths of a survey approach include the ability of a survey to measure the opinions of a sample group that can then be generalized across the population from data collected in a relatively rapid manner" (pp. 153–154). This statement appears to support the research design for this study, through which data were gathered from U.S. IT executives (managers) on survey questionnaires.

Even though research methodologists have compellingly demonstrated the relative merits of survey research design as compared to alternative research designs (Creswell, 2003; Johnson & Christensen, 2000), I encountered significant problems as the IT managers did not respond in real time to complete the survey questionnaires as quickly as I would have liked them to respond. However, with the assistance of my dissertation

chairperson and the IRB, this problem was successfully overcome. In conclusion, this problem was another limitation of the study.

Recommendations

As in any other scholarly empirical research, recommendations are drawn primarily from the limitations of the focal study and from current gaps in the relevant literature (Churchill, 1979). Thus, the results of this study offered interesting managerial implications to guide IT managers in their efforts toward crafting strategies that will promote their service innovation efforts for superior organizational performance.

Among others, the findings of the study empirically suggested that OS can, in fact, moderate (enhance) the positive influence between SSI and SSDI. Because OS was operationalized as the number of employees in each IT manager's organization, what is critical is not the quantity of the workforce, but the quality in terms of the scientific knowledge base of the workforce. Therefore, I recommend that IT managers should hire high quality scientists who will bring a cutting edge knowledge base to the organization. In this way, OS will enhance the desirable positive influence of SSI on SSDI so that the organizational competitive advantage will be enhanced to achieve superior organizational performance and more.

Implications of the Study: Social Change

The core of the mission statement of Walden University centers on delivering social change to the stakeholders of the University. To this end, research and learning activities at Walden University have been solidly anchored on one overriding objective;

namely, continuous improvement in the pursuit of best practices and delivery of the outcome of those best practices to the University's stakeholders. To this end, the objective of this study centered on ensuring that the findings of this study should make positive contributions to social change.

Specifically, social change should be achieved if IT managers glean information from the outcome of the study and then input the information in their service innovation strategic planning efforts. Among others, with the understanding that OS positively moderated the impact of SSI on SSDI, IT managers would hire the best IT scientists who would bring cutting edge service innovation to their organizations to promote competitive advantage and organizational performance. This way, service innovation would translate into social change to benefit the entire society.

Recommendations for Future Research

This study has revealed several suggestions for future research. For example, a replication of this study using different IT managers from other developed countries would provide cumulative research evidence for theory building. Second, cumulative research efforts would be needed to enhance evidence on the empirical dimension underlying the SSI construct. Even though this would be a desirable objective, to the best of my knowledge, there has been no scientifically established number of the dimensions underlying the SSI construct. Third, even though I have empirically established that OS positively moderated the influence of SSI on SSDI, it remains to be seen whether OS can mediate the influence of SSI on SSDI.

In this study, I tested moderation, not mediation. Clearly, it has been well-established that moderation and mediation are two different research objectives (Hayes, 2013). Evidently, this is a gap that needs to be filled in a specific research design designed to test whether OS would mediate the influence of SSI on SSDI. Finally, future researchers should explore whether gender plays a role in IT managers' perceptions of the relationship between SSI and SSDI, holding constant the effects of OS.

Conclusions

The purpose of this quantitative, survey-based correlational study was to use the conceptual framework of the R-A theory to investigate the relationships between three key variables: SSDI, SSI, and OS. In this framework, the research objective was to examine the hypothesized influence of SSI on SSDI, contingent on the effect of OS as a moderator variable. That is, OS was hypothesized to moderate the effects of SSI on SSDI. To attain this purpose, I addressed the following research questions and hypotheses using the framework found in Equation 1 and Figure 1.

RQ1: Is strategic service innovation (SSI) positively related to strategic service delivery innovation (SSDI)?

RQ2: Is organizational size (OS) positively related to strategic service delivery innovation (SSDI)?

RQ3: Is organizational size (OS) a moderator of the relationship between strategic service innovation (SSI) and strategic service delivery innovation (SSDI)?

I found empirical evidence suggesting that SSI was positively related to SSDI. Likewise, I found empirical evidence indicating that OS was positively related to SSDI. Finally, I found statistically significant empirical evidence suggesting that OS moderated the relationship between SSI and SSDI.

In this chapter, I discussed the managerial significance of the research results in the framework of the anticipated social change created by IT managers' use of the research recommendations to improve their service innovation strategies to achieve competitive superiority in organizational performance. Finally, I addressed possible gaps for future research in service innovation and made suggestions on how to fill those gaps.

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Appendix A: SSDI Survey Instrument

Please express the extent to which the following activities are performed in your Strategic

Service Delivery Innovation for your company. The scale varies from 'Strongly

Disagree' to 'Strongly Agree.'

1. Our company emphasizes offering new service channels for customers to order new services

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

2. Our company emphasizes offering new service channels to adjust customers to complaint

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

3. Our company emphasizes offering innovative approaches to delivering

new services

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

4 .Our company emphasizes offering new service channels to provide

after sales services

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

5. Our company emphasizes conformance of new service channels with existing

service

channels

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

6. Our company emphasizes offering existing customer service and consultation via new

   service channels

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

7. Our company emphasizes offering new service channels to deliver existing services

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

8. Our company emphasizes offering new service platforms to easily introduce new sew

    services as customer

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

9. Our company emphasizes offering new service platforms to easily develop and

    implement new services

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

10. Our company emphasizes offering new service platforms to enhance service delivery

    capabilities

(1)	(2)	(3)	(4)	(5)	(6)	(7)

Strongly Disagree	Disagree	Somewhat Disagree	Undecided	Somewhat Agree	Agree	Strongly Agree

Appendix B: SSI Instrument

Customer Demand (CD)

How important is each of these statements for your firm's service innovation. The scale

varies from 'Very Unimportant to Very Important'

1. Customer Demand for newer services (CD1)						
(1) Very Unimportant	(2) Moderately Unimportant	(3) Slightly Unimportant	(4) Undecided	(5) Slightly Important	(6) Moderately Unimportant	(7) Very Important

2. Customer Demand for services of superior value (CD2)						
(1) Very Unimportant	(2) Moderately Unimportant	(3) Slightly Unimportant	(4) Undecided	(5) Slightly Important	(6) Moderately Unimportant	(7) Very Important

3. Customer Demand for quality services (CD3)

(1) Very Unimportant	(2) Moderately Unimportant	(3) Slightly Unimportant	(4) Undecided	(5) Slightly Important	(6) Moderately Unimportant	(7) Very Important

Competition (Comp)

Please express the level of importance for the following activities for your firm's

competition. The scale varies from 'Strongly Disagree' to 'Strongly Agree'.

1. Globalization of the market economy (Comp1)						
(1) Strongly Disagree	(2) Moderately Disagree	(3) Slightly Disagree	(4) Undecided	(5) Slightly Agree	(6) Moderately Agree	(7) Strongly Agree
2. Intensified Competition (Comp2)						

(1) Strongly Disagree	(2) Moderately Disagree	(3) Slightly Disagree	(4) Undecided	(5) Slightly Agree	(6) Moderately Agree	(7) Strongly Agree

3. Threat of foreign competition (Comp3)

(1) Strongly Disagree	(2) Moderately Disagree	(3) Slightly Disagree	(4) Undecided	(5) Slightly Agree	(6) Moderately Agree	(7) Strongly Agree

4. Low barriers to entry (Comp4)

(1) Strongly Disagree	(2) Moderately Disagree	(3) Slightly Disagree	(4) Undecided	(5) Slightly Agree	(6) Moderately Agree	(7) Strongly Agree

Knowledge-Based Network (KRN)

Please express the extent of your agreement or disagreement with the statement that service firms draw innovative service ideas from the following activities mentioned below. The scale varies from 'Strongly Disagree' to 'Strongly Agree'.

1. Acquisition of knowledge through collaboration (KRN1)						
(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

2. Using their ability in creating, acquiring, and managing knowledge (KRN2).						
(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

3. Stimulating information exchange between departments (KRN3).

(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree
4. Stimulating information exchange with partners or suppliers (KRN4).						
(1) Strongly Disagree	(2) Disagree	(3) Somewhat Disagree	(4) Undecided	(5) Somewhat Agree	(6) Agree	(7) Strongly Agree

Appendix C: Invitation to Participate

Email header: *IT Executives/Managers Survey:* Relationship between strategic service innovation and strategic service delivery:

Dear IT Managers,

I am a doctoral candidate at Walden University in the Management Program specializing in Public Management and Leadership with emphasis in strategic management. I am writing to ask for your help with an anonymous survey to examine whether organizational size moderates the relationship between strategic service innovation and strategic service delivery. Continuous service delivery technology innovation is one of the most critical problems facing executives and managers in their organizations in the 21st century. This dissertation survey will help me to obtain your insight on how strategic service innovation influences strategic service delivery innovation. You are being asked to participate in this study because you are active members of IT executives/managers in your organization which is a competitive market environment. Additionally, the study may aid in the development and implementation of more effective strategic leadership development programs.

I am asking you to complete my online survey questionnaire presented on the website QuestionPro.com. The completion of this questionnaire is strictly on a <u>voluntary basis </u>and your <u>responses are anonymous</u>. The completion of this questionnaire should take approximately 15 minutes of your time. After receiving this invitation to participate, a follow-up email reminding participants to complete the survey questionnaire will be sent three days later and will include the survey link: QuestionPro.com. After the reminder email, no other communication will be initiated.

A Walden University professor will supervise the data collection effort and no information will be provided in the dissertation to identify any person or organization under study. To access the questionnaire please click on the link above or copy and paste it to your favorite browser.

Thank you for your willingness to contribute to my survey.

Respectfully

Sheikh O. Tejan

Walden University

Doctoral Candidate

Approved:

Shawn Gillen, Ph.D., Professor of **Philosophy PPA**, Dissertation Chairman

Mi young Lee, Ph.D., Professor of **Philosophy PPA,** Dissertation

Committee

Tanya Lynne Settles, Ph.D., Professor of **Philosophy PPA,** Dissertation

Review Committee

Please provide the following general information.

(1) Gender: Male___Female _____

(2) Age: _____

(3) Average monthly income: _____

(4) Highest education level attained:

    Primary: _____ Secondary: _____ College/University: _____

(5) Number of employees: _____

(6) How many years has your organization been in business: _____