

Service Innovation and Service Innovation Performance: A Study of Banking Services

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Abstract

This study empirically examines the relationship between service innovation and service innovation performance. Typology of service innovation (SI) based on new service offering/product (NSO), new service process (NSP) and new service business model (NSBM) is tested for their likely effect on service innovation performance (SIP) of banks from a developing country context in the face of business environment (BE) characterized by dynamism and competitiveness. It uses quantitative data gathered through cross-sectional self-administered survey questionnaire on a 5-point Likert-type scale from a sample of 220 managers from the banking organizations to predict the impact of service innovation on service innovation performance. Data are analyzed through SPSS-19 and Amos-18 by means of bivariate correlation and regression. Results indicate a strong impact of multi-dimensional service innovation on service innovation performance. Each dimension of service innovation significantly predicts service innovation performance. Business environment theorized in terms of competition and uncertainty fails to moderate the relationship between service innovation and service innovation performance. In this way, this study offers many valuable insights in the field of service innovation and performance management areas which can be valuable to several stakeholders such as researchers, practitioners and policy makers in developing and implementing optimum service innovation strategies to augment and synergize performance of their services.

Keywords: service innovation, service innovation performance, business environment, service sector, banking sector.

1. Introduction

Services and innovations in services are considered as one of the key economic developmental drivers and engines of growth (Morrar, 2014). Countries historically recognized as industrial economies dominated by manufacturing sector are transforming and increasingly relying on services (Hsieh et al., 2013). Services now dominate the developed economies (Wang et al., 2015) with the share of up to 70% in GDP of OECD countries which is still on rise (Gallouj & Windrum, 2009). Service innovation is being acknowledged for bringing economic well-being and growth (Gallouj, 2002) and may

have a positive impact on the whole economy (Awais, 2011). Innovation is central to the existence and growth of any organization (Agarwal et al., 2003) or a country. It is recognized as a strategic driver of economic growth and performance, sustainable competitive advantage, and even survival (Durst et al., 2015; Merrilees et al., 2011; Hong et al., 2016).

There is dearth of empirical research in the realm of service innovation and its likely impact on performance compared with product innovation and many researchers have identified several gaps in this regard. A review of literature on service innovation points out that this area although on the rise is still under-researched compared to manufacturing sector (Jaw et al., 2010). According to Jansen et al. (2006), despite their massive socio-economic relevance, services and service innovation are under-researched phenomena. In words of Durst et al. (2015), “even though there is a mass of contributions discussing the relevance of innovation management in general, the opposite seems to be true when we consider the aspect of service innovation measurement and performance, there is a lack of research”. According to Chen et al. (2011), despite appeals for more research in this area, a service-related research gap remains mainly in the realm of service innovation. Further evidence thus needs to be gathered and understood in order to make development in this field (Rubalcaba et al., 2012). According to Droege et al. (2009), the classic product/process dichotomy is doubted to fully encompass service innovation and discovering distinctive dimensions of service innovation is the key opportunity in service innovation research.

Research on innovation in services is getting increased attention in the recent years by the researchers and practitioners alike and the concept of service innovation is becoming multidimensional. This multidimensional character of service innovation demands further scrutiny of its various aspects and perspectives. Previous research shows that knowledge on the subject is under-developed; particularly its sectorial dimensions are yet to be further researched in diverse settings. The limited research on service innovation and performance linkage in general and increasing importance of service sector in terms of growing share in economies and significant size of workforce employed by it, in particular, requires extensions. Moreover, the theory that establishes the service innovation and its performance linkage in various subsectors of services sector is sparse. Additionally, there are very few studies on the subject in a developing country context. This scenario creates dissatisfaction amongst researchers and practitioners which resultantly motivates them to explore this area empirically in diverse sectors, economies and settings to get in-depth insights into the field. Additionally, there is theory/practice gap which needs to be bridged.

This study aims to; examine the level of service innovation in one of the highly important service sectors (Banking services sector), empirically analyze the impact of service innovation on performance of banking organizations, test the multi-dimensional nature of service innovation, find out how uncertainty (dynamism) and hostility (competitiveness) influence service innovation and service innovation performance linkage, contribute theoretically by adding a fresh addition to

current understanding on service innovation and service innovation performance, suggest some practical insights and implications that might be helpful for a wide variety of stakeholders in the broader service sector to improve performance of service industries in developing countries.

The specific research questions which will be addressed in this research study are:

- Does SI impact SIP?
- How strong is the relationship between SI and SIP?
- Is SI multi-dimensional in the banking sector of the country case?
- Do different dimensions differently impact SIP?
- Does BE significantly moderate the relationship between SI and SIP?
- How dynamism and competitiveness interact between each dimension of SI and SIP?

Services and innovation in services have long been overlooked. The importance of service innovation started getting attention as soon as the share of services to GDP increased both in developed and developing economies. In addition, the realization of the fact that merely products were not adequate for the complete solution of a customers' problem or demand, led organizations to supplement services along with core products to provide full solution and fully satiate partially satisfied demand. Both these factors played role to attract the attention of researchers and practitioners to turn to services and service innovation. Banking sector in the country case is one of the most developed, innovative, high-performing, dynamic and competitive sectors, hence the primary choice for this study. According to economic survey of Pakistan 2016-17, the share of the services sector has reached to 59.59 percent of GDP in FY 2017. The services sector recorded a growth of 5.98 percent and surpassed its set target of 5.70 percent. Finance and insurance activities show an overall increase of 10.77 percent. This study intends to find out whether this development and top performance of the banking sector is the result of service innovation or otherwise. In addition, this sector has seen several mergers and acquisitions in the recent past. So, all these recent developments in banking sector make it suitable for investigation as far as variables of this study are concerned.

This study has been organized as follows: the next section reviews the literature on service innovation, service innovation performance and business environment and their interactive relationship. Section three gives a glimpse of gaps identified in the literature which this study aims to bridge by building a theoretical framework and founding the conceptual underpinnings of the study. Section four defines the methodological procedures used in the study. It is divided into two sub-sections. First sub-section details sampling issues while the second one deals with the items, measures, and reliability. Section five presents result of the statistical analysis in terms of means, standard deviations, bivariate correlations and regressions to accept/reject hypotheses. Last section holds an extensive discussion on results and concludes the study. In the end, this section puts forth theoretical/managerial implications, limitations of the study and future research directions.

2. Literature Review

2.1 Independent Variable: Service Innovation (SI)

Innovation has been defined in various ways by different researchers. Perhaps the best description of innovation was put forth by Rogers (2003) as any new idea, new action, or new artifact seen novel by a person or entity. According to Rogers (1998), innovation is the process of developing idea and commercializing or extracting benefit out of that. Du Plessis (2007) defines innovation little differently, according to whom; it is the creation of new knowledge and ideas to materialize business outcomes with the aim to improve in-house company processes/structures and to craft market-oriented goods and services. According to Durst et al. (2015), service innovation is innovation being carried out in diverse scenarios of service sector that encompasses developing entirely new services or gradually improving existing services. Rubalcaba et al. (2012) define service innovation mainly from manufacturing-sector perspective. According to them, it is innovation by a business firm in services as characterized by the development of service strategies in manufacturing.

Service innovation is a multi-dimensional construct (Den Hertog et al., 2010) which encompasses different approaches and perspectives and is complicated (Rubalcaba et al., 2012). Ostrom et al. (2010) present an all-encompassing approach to define service innovation. According to them, it is the creation of worth for consumers, human resources, owners, allies, and society through novel and improved service products, service processes, and service business model. Forfas (2006) proposed a multi-dimensional framework for service innovation consisting of three dimensions: service product innovation, service process innovation and service business model innovation. Among others, these three basic dimensions have been widely discussed in literature. The framework by Forfas was later amended by Voss and Zomerdijk (2007). Interactive relationship between these three dimensions of service innovation is ambiguous as focus of service innovation research has been on new service offering/product or new service process (Wang et al., 2015). A clear distinction between product and process dichotomy is difficult as service is a process rather than an artifact (Gallouj, 2002). Contrary to the above observation, Droegge et al., (2009) explain that a distinction between service product and process is possible and these two are separate dimensions.

This confusion about product/process dichotomy is since both are carried out together and are very closely related to each other (Uchupalanan, 2000). Very often, a change in the process requires a corresponding change in product and a change in product requires process to change (Gallouj, 1998) as provision of service is a journey for customers consisting of multiple components and touch points over the period of service provision (Rawson et al., 2013). Researchers delineate service product innovation as a novel service offer in response to the need of a customer or market while service process innovation as the introduction of something new in the production service operations to render a service offer (Gopalakrishnan et al., 1999). Boone (2000) defines service

product innovation as the innovation of a brand-new service offer which should be new to the organization, market or the industry. On the other hand, service process innovation is defined as the realignment of service delivery channel that might lead to novel approaches to satiate customer needs.

Similarly, Zomerdijk and Voss (2011) define service process innovation as either radical changes in the process of service delivery channel which lead to a unique new experience about the service or incremental improvements to the existing service delivery processes perceived new by customers. Damanpour and Gopalakrishnan (2001) investigate the dichotomy and find that service product innovation is more frequently adopted and usually precedes service process innovation in the banking services. They further find that both are combined and occur simultaneously in line with the observation above by Uchupalanan (2000). But Shang et al. (2009) add that service product innovation may be the result of innovation in the service process because service production and delivery are instantaneous.

Apart from the above debate on product/process dichotomy, new service business model is usually specifically characterized as a considerable or even a thorough transformation in the ways in which revenues and profits are earned often accompanied by innovations in organizational arrangements to facilitate this change (Voss & Zomerdijk, 2007). Wang et al. (2015) argue that the evolving acknowledgment of innovation in service business models in the service milieu demands that multi-dimensional service innovation framework should also consider it as the relationship between these three dimensions is not yet clear. According to Droege et al. (2009), the classic product/process dichotomy is doubted to fully encompass service innovation and discovering distinctive dimensions of service innovation is the key opportunity in service innovation research. So, we include these three dimensions of SI in our study to fully encompass the multi-dimensional nature of service innovation and their impact on SIP.

2.2 Dependent Variable: Service Innovation Performance (SIP)

Like service innovation, service innovation performance too is a complicated construct (Chenhall & Lansfield-Smith, 2007) and has been operationalized in variety of ways, particularly in the context of service innovation. This complex nature of performance is due to the reason that services have specific different characteristics which distinguish them from products. These specificities of services influence the definition and measurement of productivity and performance of service innovation (Djellal & Gallouj, 2009). In words of Durst et al. (2015), services are of extremely tailored nature, shaped to customer needs and traditional outdated product-based measurement tools are not appropriate for the measurement of service innovations' impact. Morrarr (2014) says "measuring the productivity of immaterial and non-technology-based services might need different methods from those employed to measure the productivity of material and technical activities in the manufacturing sector".

Hassan and Al-Hakim (2011) define organizational performance as "the integration between organizational knowledge and innovation competence to achieve positive goals

that have been identified previously”. According to Pitt and Tucker (2008), “organizational performance is a vital sign of the organization, showing how well activities within a process or the outputs of a process achieve a specific goal”. Tidd (2001) argues that while it is easy to understand how innovation contributes to business performance, it is difficult to demonstrate it empirically. A noticeable issue widely discussed in the performance management literature is the measurement of performance, especially the service performance measurement. Previous research took a very narrow focus of performance by taking financial parameters as measures of organizational performance. For example, profitability, gross profit, return on assets, return on investment, return on equity, return on sales, revenue growth, market share captured, sales growth, and operational efficiency (e.g. Fuentes-Fuentes et al., 2004) are traditionally used to exhibit performance.

In recent years, various approaches towards performance measurement across variety of disciplines (Chenhall & Langfield-Smith, 2007) have been developed which have added ambiguity in devising measurement scale for performance. In the same vein, with the increasing number of studies on service management, service performance measurement has gained more specific attention (Pawar et al. (2009) and this field has emerged as an important area of research with the growth in service management research (Bititci et al., 2012). Hence, service innovation performance may have variety of aspects and antecedents. Service innovation performance is defined as the extent to which a firm attains strategic competitive advantage and commercial success with respect to service innovation (Mennens et al., 2018; Storey et al., 2016) by sharing and managing knowledge on innovation (Hanif et al. 2016). Service performance measurement is regarded as more complicated one compared to the manufacturing context (Pawar et al., 2009). Therefore, the development of key performance indicators and measurement frameworks for services receives considerable attention (Tyagi and Gupta, 2013).

2.3 Business Environment (BE)

No organization can escape from the environment it operates in. External environment is inevitable as well as crucial for organizations whether service or manufacturing as it brings opportunities and threats. Being such an important factor in the life of organizations, business environment is taken as a variable that is likely to moderate the relationship between main variables of this study. For that reason, two measures of business environment in terms of uncertainty (dynamism) and hostility (competitiveness) were included as moderating variables likely to impact service innovation and organization’s performance. Both measures for uncertainty and hostility replicate the study by Jansen et al., (2006). These two variables have shown in the past to be linked with performance (Lee & Miller, 1996). The inclusion of dynamism and hostility in the analysis is even more important given the focus of this study is on the country where its business environment is considered as highly dynamic and hostile. Financial sector in the country case is generally one of the most dynamic and competitive sectors. Previous

literature shows that the impact of external environment on innovativeness and performance is widely recognized (e.g. Zahra & Bogner, 2000). Miller and Friesen (1983), for example, found that environmental characteristics moderate the relationship between innovation and performance. In addition, literature argues that environmental dynamism and competitiveness are to be expected to moderate the impact of innovation on performance (Lewin et al., 1999).

Environmental dynamism refers to the rate of change and the degree of instability of the environment (Dess & Beard, 1984). Prior research does not only characterize environmental dynamism through the degree of change, but also through the unpredictability of change (Dess & Beard, 1984). Dynamic environments may be characterized by changes in technologies, discrepancies in customer preferences, and variations in product demand or supply of materials. Turbulent and changing environments make current products and services outdated and necessitate new ones to be developed (Jansen et al., 2005). To restrain this risk of obsolescence, organizations need to introduce innovations that quit from current products, service, and markets. Environmental competitiveness is the extent to which external environments are characterized by intense competition (Matusik & Hill, 1998). It refers to the degree of competition reflected in the number of competitors and the number of areas in which there is competition (Miller, 1987). Competitive environments have been linked with serious pressures for greater productivity and lower prices (Matusik & Hill, 1998) that lead to tighter margins and less organizational slack (Zahra, 1996). Miller and Friesen (1983) argue that extensive risk taking, forceful pro activeness, and strong emphasis on novelty can be hazardous when competitive conditions are becoming more demanding.

3. Research Gap and Theoretical Framework

The detailed review of the literature in the previous section reveals that empirical research on service innovation and performance has so far been unable to bring about clear conclusions about whether service innovation really impacts service innovation performance in diverse settings (Rosenbusch et al., 2011). This observation by Rosenbusch and colleagues is consistent with the conclusion by Durst et al. (2015) who very recently reviewed the literature on service innovation and its impact and concluded that understanding on the relationship between service innovation and performance is underdeveloped. They call for an in-depth inquiry into this potentially promising field of research. There is a dearth of specific industry-based studies on service innovation that might address particular service sectors (Rubalcaba et al. 2012). It is argued here that service innovation is a process and to measure its real impact on performance, it is necessary to be able to measure the service innovation performance of the process instead of measuring the overall business performance.

Oke et al. (2007) were the first to distinguish between service innovation performance and business performance. Outcome level measures such as financial and non-financial measures may predict service innovation performance more accurately than perceptual measures but the issue is that they tend to be innovation specific and not every innovation

performance can be measured through these measures (Oke et al., 2007). Patent, for instance, is a non-financial outcome level measure for service innovation performance but not every new service can be patented, hence innovation performance will not be measured and translated into business performance. To overcome this drawback, some scholars suggest a process approach that measures performance of service innovation process through perceptual measures. This process approach to measuring the real impact of service innovation performance may be more promising (Durst et al. 2015). Except for the studies by Oke et al., (2007) and Yen et al., (2012), no other researchers have ever tried to distinguish between service innovation performance and business performance; neither has employed the process approach to measuring the real impact of service innovation.

In the similar vein, Wang et al. (2015) empirically tested a typology by investigating the inter-relationships among new service product/offering, new service process and new service business model and pointed out that their mutual relationship is “still unclear”. In another study, McDermott and Prajogo (2012) emphasize the need to do considerable work in understanding the underlying relationships between service innovation and performance. Most important observation in this regard was put forth by Ostrom et al. who, in 2015, engaged in an international inter-disciplinary research organized for the purpose of identifying priorities for service research and pointed out that “understanding the inter-relationships among service product, service process, and business model innovation is one of the five important directions for future research in service innovation” (Ostrom et al., 2015).

In another vein, Carlborg et al. (2014) carried out a comprehensive review and content analysis of the evolution of service innovation research from 1986-2010 and concluded that “the geographical variety of the empirical studies was limited” on the topic of service innovation. In their review, they also spotted that majority of the studies on service innovation focused on northern and Western Europe, North America, or Taiwan and emphasized the importance of carrying out service innovation research in developing economies. This study aims to fill these gaps by empirically analyzing multi-dimensional nature of service innovation and its impact in a developing country context by proposing the following hypotheses and framework presented in Figure 1 based on the literature in the field. Forfas (2006) proposed a multi-dimensional framework for service innovation which was later amended by Voss and Zomerdjik (2007) and tested by Wang et al. (2015). We base our study on this framework of service innovation. As the impact of external environment on innovativeness and performance is widely recognized (e.g. Zahra & Bogner, 2000), thus we incorporate a moderator. Miller and Friesen (1983), for example, found that business environment moderates the relationship between innovation and performance. In addition, literature argues that environmental dynamism and competitiveness are to be expected to moderate the impact of innovation on performance (Lewin et al., 1999). McDermot and Prajogo (2012) in their study kept both dimensions of business environment as control variables. In addition, service innovation performance

has been widely discussed in literature (Mennens et al., 2018; Storey et al., 2016; Yen et al., 2012). So, the model has theoretical underpinnings based on these studies.

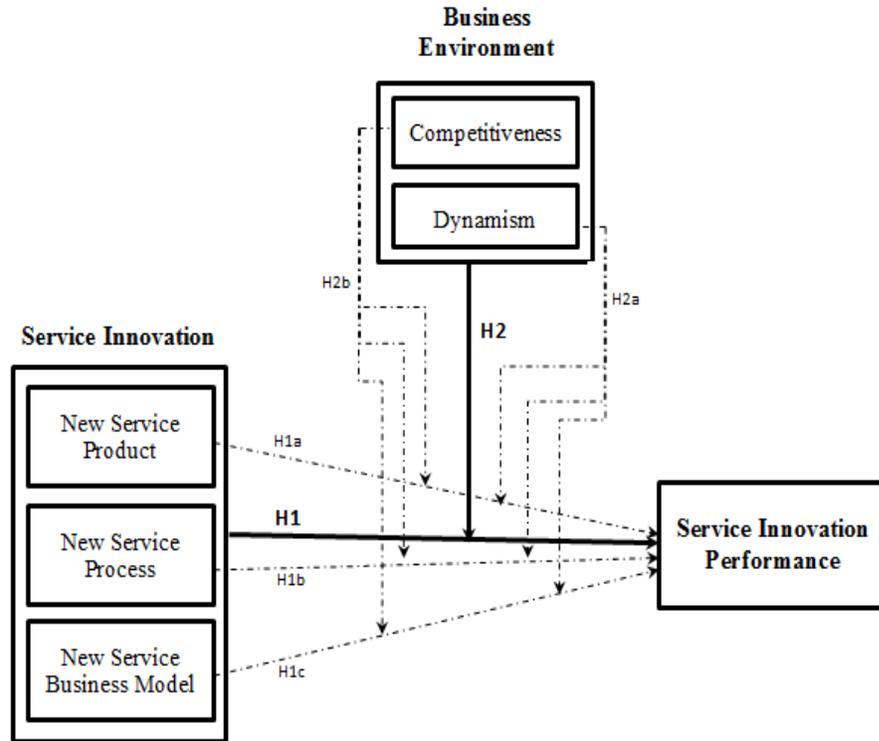


Figure 1: Theoretical Framework

4. Methodology

The scope of this study has been kept limited to the service innovations taking place in the banking sector organizations geographically located in the south of Punjab. As per records of State Bank of Pakistan (SBP), there are total 35 different banks with more than 9,000 branches countrywide. Out of them, 5 are public sector commercial banks, 21 are local private banks, 5 are foreign banks, and 4 are specialized banks. For the purpose of this study, public sector banks are excluded from analysis due to their non-market behaviors. Foreign banks are also excluded from the analysis as the research study is limited to the banking sector of organizations with their origins and headquarters in Pakistan. Specialized banks are also excluded as all the specialized banks are public sector banks. Thus, a total of 21 private local banks is available population for analysis restricted to geographical boundaries of southern Punjab having three administrative divisions (Multan, Bahawalpur, and D.G. Khan). Within this geographical region, simple random sampling was applied and a

cross-sectional sample of 220 bank branch managers out of 21 private local banks was drawn, keeping in view the research objectives, desired significance level, statistical technique being employed, cost and time constraints and the size of population.

Business Environment is measured by using the scales developed by Jansen et al., (2006) and replicated by McDermott and Prajogo (2012). Uncertainty (Dynamism) is measured through 5-item scale whereas hostility (competitiveness) is measured by 4-item scale. Yen et al. (2012) developed measures for service innovation based on the definition of Ostrom et al. (2010) in terms of three dimensions. As this study considers a multi-dimensional approach to service innovation, thus it employs different forms service innovation may take in any organization. Service innovation may take the form of new service product/offering, new service process or new service business model. Hence, in order to grasp the multi-dimensional nature of service innovation, three different dimensions are measured individually by the items developed by Yen et al. (2012). Each of the three dimensions is quantified separately by 3-item scale for each dimension. Hence a total of 9-item scale is employed in this study to measure the multi-dimensional concept of service innovation. 7-item scale for service innovation performance measurement is chosen by combining several items to grasp the multi-dimensional nature of it. First four items are taken from the study by Yen et al. (2012) which they adapted from the study of Menor and Roth, (2007). Last three items were taken from Cheng and Krumwiede (2012) who adapted them from Matear et al. (2002) and de Brentani and Kleinschmidt (2004).

The measures for service innovation and business environment use 5-point Likert-type scales anchored at strongly agree (5) strongly disagree (1). The measure for service innovation performance also uses 5-point Likert-type scale but is anchored at very high numerically represented by (5) and very low by (1). Measures to quantify the variables are quite well established in the field of service innovation. Hence, their validity may not be the concern as in words of Sekaran and Bougie (2016), “when well-validated measures are used, there is no need, of course, to establish their validity again for each study. The reliability of the items, can however, be tested”. Pilot testing of the questionnaire was carried out by drawing a sample of 50 managers from the originally chosen sampling frame. Out of the sample of 50, only 29 respondents returned the questionnaire along with their feedback to improve it. Some issues of wording, content and appearance that arose during the pilot testing were removed in the light of opinion by experts and respondents. 29 usable responses were entered into SPSS-19 for the purpose of reliability check. All the measures showed high internal consistency with Cronbach alpha beyond 0.7 that Nunnally (1978) recommended.

5. Results

5.1 Means, Standard Deviations and Correlations

Survey questionnaire was personally administered by visiting managers from sampled banking organizations located in the three major cities namely Multan, Bahawalpur and

D.G. Khan. Out of 220 survey questionnaires administered, 133 usable responses were received with a response rate of 60%. Non-response bias was tested through wave analysis. This analysis checks whether late responses represent non-responses (Rogelberg and Stanton, 2007). Results indicate no statistical differences between the early and late returned questionnaires. This shows that there is no trouble with data regarding non-response bias. Data from 133 respondents were entered into SPSS-19 and analyzed by means of descriptive statistics, correlations and linear regression through SPSS-19 and Amos-18. The coefficient of determination (R square value) which is the goodness of fit of the regression model in this case is found to be 0.214. This implies that almost 22 % variation in dependent variable performance is explained by independent variable service innovation. Standardized regression coefficient (Beta) for service innovation is 0.463 which determines the slope of the regression line and is interpreted as performance would change by over 46% with one unit change in service innovation. The mean values are above 4 suggesting that sampled organizations are innovative, perceive business environment to be dynamic and competitive and have high performance in terms of service innovation.

Table 1: Means, Standard Deviations, Bivariate Correlations

	Means	SD	NSO	NSP	NSBM	Uncertainty	Competitiveness	SI	BE	SIP
NSO	4.2556	.53005	1							
NSP	4.3434	.49567	0.323*	1						
NSBM	3.9599	.67549	0.276**	0.290**	1					
Uncertainty	4.0782	.56345	0.154	0.225**	0.195*	1				
Competitiveness	4.1241	.54497	0.158	0.079	0.111	0.486*	1			
SI	4.1863	.41429	-	-	-	0.262*	0.160	1		
BE	4.0986	.47999	0.180*	0.187*	0.184*	-	-	0.251**	1	
SIP	4.1117	.42179	0.309**	0.295**	0.393**	0.271*	0.109	0.463**	0.231*	1

Significant at: * $P < 0.05$ and ** $P < 0.01$

Bivariate correlations are given above in the table. Service innovation is significantly correlated with both service innovation performance and business environment at 0.01 level of significance. Business environment is significantly correlated with service innovation performance. So, all main variables are significantly correlated with each other at 0.01 significance level. In the similar way, each dimension of service innovation was significantly correlated with other dimension of service innovation and with service innovation performance. However, correlation between new service offering and uncertainty was insignificant yet positive and correlation between new service process and uncertainty was significant at 0.01. Correlation between new service business model and uncertainty was insignificant at 0.01 but significant at 0.05 significance level. In the

same way, all three dimensions of service innovation were found to be uncorrelated with competitiveness. Uncertainty was significantly correlated with service innovation and service innovation performance but competitiveness was not as shown in the table above.

5.2 Regression

Simple linear regression was carried out and Table 2 below shows standardized regression coefficients for baseline and inter-dimensional effects. Baseline value shows that service innovation significantly impacts service innovation performance at 0.01 level of significance which supports our first main hypothesis as depicted in figure 2 below.

- **H₁**: Service Innovation (SI) significantly impacts service innovation performance (Supported)

Table 2: Regression Results

	Service Innovation Performance
<i>Service Innovation (Baseline)</i>	0.000**
NSO	0.000**
NSP	0.001**
NSBM	0.000**

Note: Significant at: * $P < 0.05$ and ** $P < 0.01$

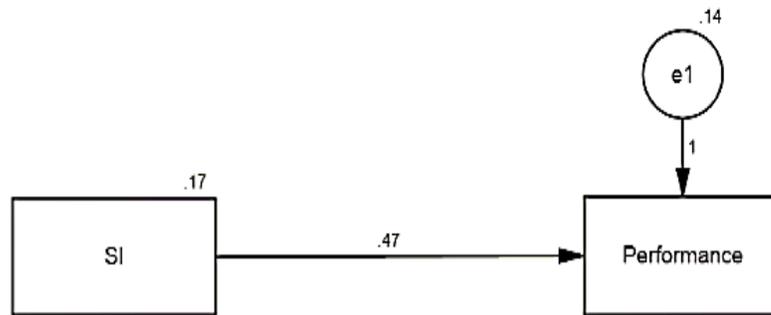


Figure 2: Baseline Model

To test for the dimension based sub-hypotheses, each dimension of service innovation is individually and separately treated with service innovation performance as shown in Table 2 above. New service offering/product is regressed on service innovation performance individually and the result shows it significantly impacts it. As a result, our first sub-hypothesis H_{1a} is supported.

- **H_{1a}**: New Service Offering (NSO) significantly impacts service innovation performance (Supported)

New service process is treated in the same manner and results show that it significantly impacts service innovation performance. Therefore, our second sub-hypothesis is also supported.

- **H_{1b}**: New Service Process (NSP) significantly impacts service innovation performance (Supported)

New service business model was accordingly treated and results attest that it significantly impacts service innovation performance. Hence, our third sub-hypothesis is also supported.

- **H_{1c}**: New Service Business Model (NSBM) significantly impacts service innovation performance (Supported)

In order to find a synergistic effect of all three dimensions, variance inflation factor (VIF) was calculated. All VIF values between the dimensions were below 10, indicating that multi-collinearity is not a problem in this case. Figure 3 below shows combined effects for each dimension suggesting that all three dimensions have different effects on service innovation performance.

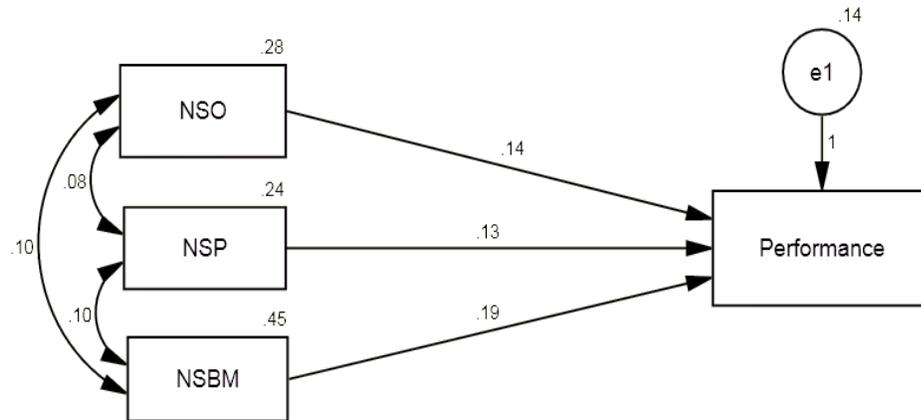


Figure 3: Inter-Dimensional Impact of IV on DV

5.3 Moderation

Moderation analysis was executed by creating standardized versions of each variable in the model to avoid multi-collinearity and creating a product term for independent variable SI and moderating variable BE. This product term was then regressed on dependent variable service innovation performance through multiple regressions by entering

independent variable, moderating variable, and the product term. Interaction effect of moderating variable business environment is supposed to occur if interaction term significantly regresses dependent variable service innovation performance. But in this case, interaction term is insignificant which suggests that there is no interaction effect, consequently no moderation has occurred. So, second main hypothesis of the study is not supported by the results as shown in figure 4.

Table 3: Moderation

	Service Innovation Performance
Business Environment (Baseline)	0.490
Uncertainty × NSO	0.674
Uncertainty × NSP	0.171
Uncertainty × NSBM	0.747
Competitiveness × NSO	0.101
Competitiveness × NSP	0.191
Competitiveness × NSBM	0.436

Note: Significant at: * $P < 0.05$ and ** $P < 0.01$

- **H₂**: Business Environment (BE) significantly moderates the relationship between service innovation and service innovation performance (Not Supported)

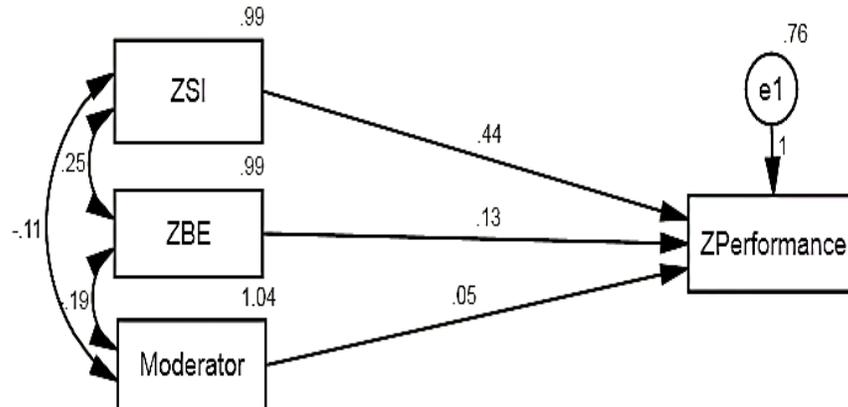


Figure 4: Baseline Moderation

Moderation results presented above in table 3 and below in figure 5 to 10 show that neither of the business environment dimensions significantly moderates the relationship between each dimension of service innovation and performance. Hence no moderation occurs either in baseline effects or in inter-dimensional effects. So, both sub hypotheses are not supported.

- **H_{2a}**: Uncertainty (Dynamism) significantly moderates the relationship between all three dimensions of service innovation and service innovation performance (Not Supported)
- **H_{2b}**: Competitiveness significantly moderates the relationship between all three dimensions of service innovation and service innovation performance (Not Supported)

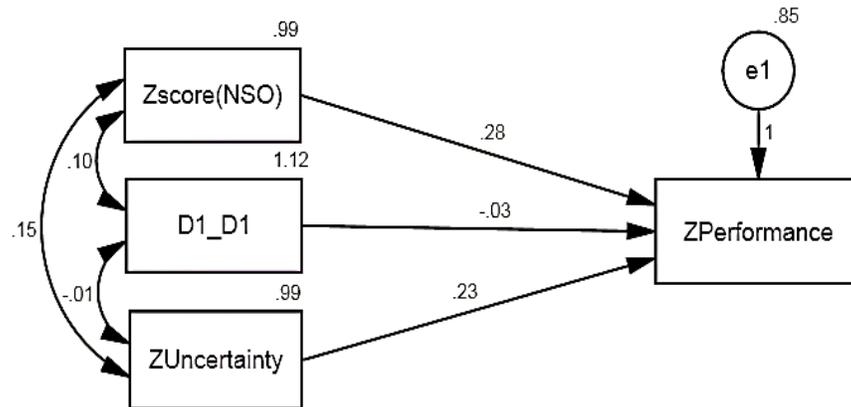


Figure 5: Uncertainty Interacting between NSO and SIP

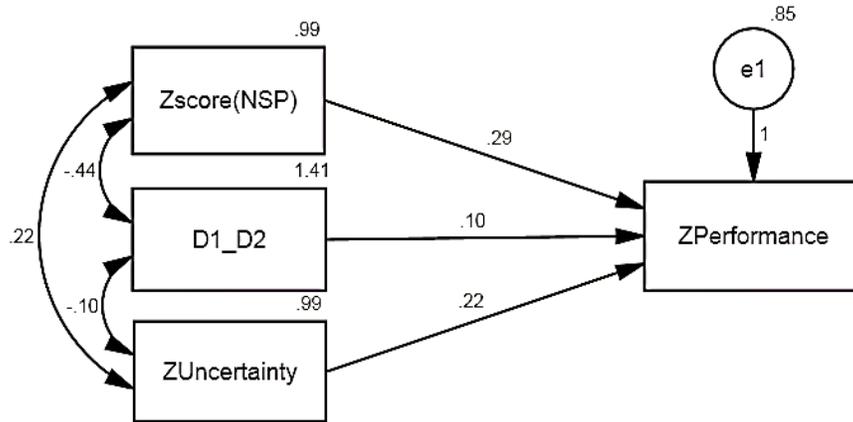


Figure 6: Uncertainty Interacting between NSP and SIP

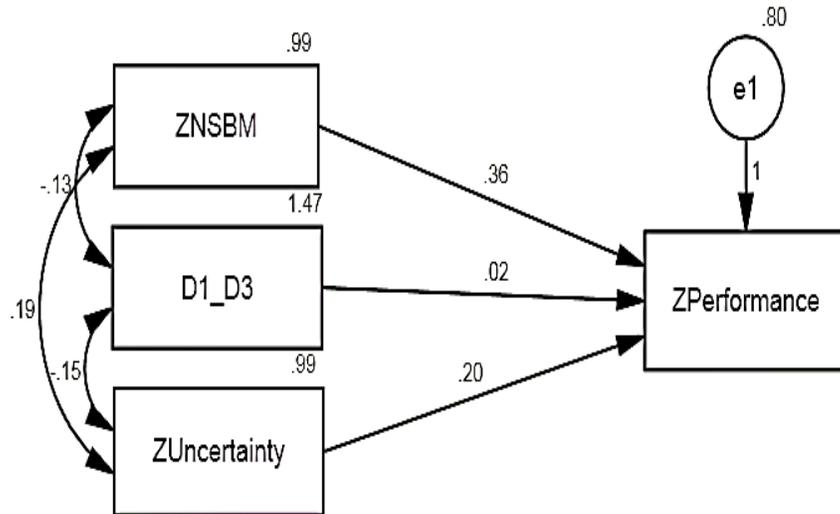


Figure 7: Uncertainty interacting between NSBM and SIP

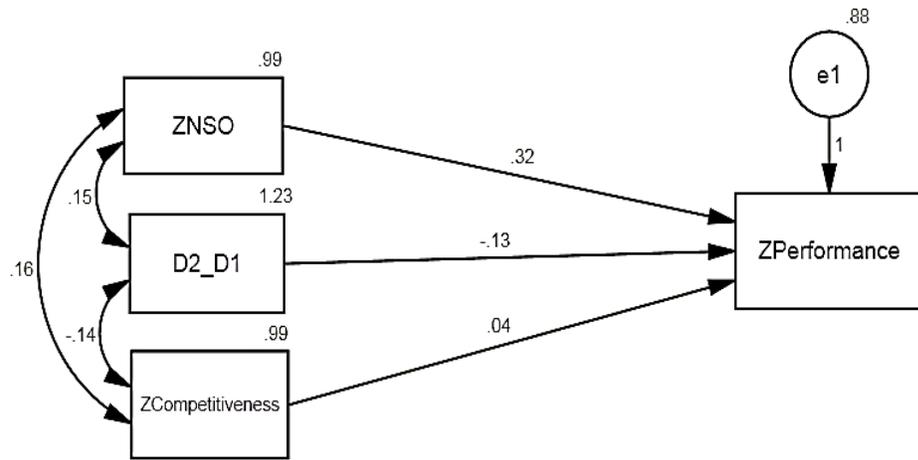


Figure 8: Competitiveness Interacting between NSO and SIP

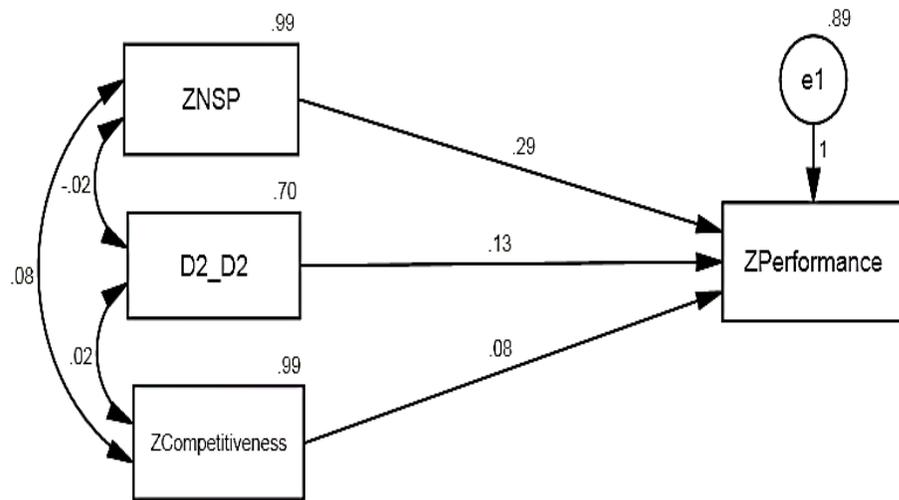


Figure 9: Competitiveness Interacting between NSP and SIP

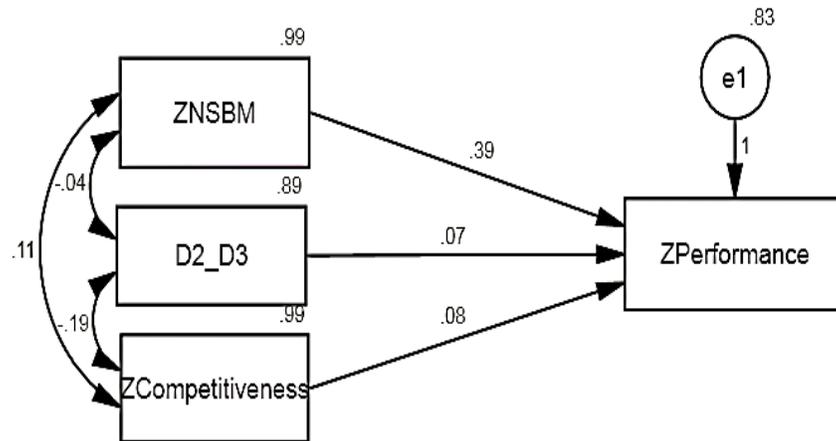


Figure 10: Competitiveness Interacting between NSBM and SIP

6. Discussion and Conclusion

This research undertaking offers new insights in the fields of service innovation management and performance management. Multi-dimensional nature of service innovation is highlighted in two stages. The former stage throws light on the relationship between main variables service innovation (IV), service innovation performance (DV) and business environment (MV). The latter explores these variables further by examining and validating inter-dimensional relationships between these variables. First, this study finds that service innovation significantly impacts performance of the banking sector organizations in the country case which was hypothesized to be so. This finding is in line with the findings of the many studies carried out on service innovation in relation to service innovation performance. It reinforces the previous findings that service innovation directly and significantly impacts service innovation performance (Hong et al., 2016; Mennens et al., 2018).

In the same way, the role of business environment in terms of dynamism and competitiveness was tested which was hypothesized to interact between service innovation and performance. Business environment has shown in the previous researches to interact between innovation and performance. But contrary to previous studies, it did not interact in our case as reflected by the mean value for the variable which might infer that either service innovation is thought to be an in-house activity with little emphasis to competitiveness and dynamic changes in business environment or managers pay attention to these forces in business environment but are unable to relate them to service innovation activities. Mean values for all three main variables were above four on the

scale between 1-5 which suggested that managers emphasized, executed and valued service innovation, perceived business environment to be highly dynamic and competitive and their service innovation performance was good.

To delve deep into the mutual and underlying relationships between these main variables, their inter-dimensional properties were examined. New services were being developed in terms of new service offering/product, new service process and new service business model but new service business model was relatively less focused than the former two dimensions. This finding is in line with Wang et al. (2015) who state that both product and process innovations can be combined and occur jointly while business model innovations are complex, difficult to develop and implement and require more resources as compared to product and processes. Hence, new service products and new service process closely resemble in our case. However, all these dimensions were significantly correlated to each other which implied that any new development in any of this dimension tended to positively influence the other dimension. For example, any new service product development would require changes in current processes and business models and vice versa. New processes and new business models will have to be developed to deliver the newly developed service.

In addition, all three dimensions significantly contributed to performance but with varying degrees. Through this finding we can infer that with varying effects on performance, managers can identify which new services are contributing better to performance than the other and more focus can be paid on them. Furthermore, an optimum combination of all three dimensions can synergize performance as all of them significantly impact performance. Thus, service innovation is significant contributor to service innovation performance of the banking sector organizations in this case. However, new service business model explained the highest variation to performance which implies that although new business models are difficult to develop and implement but contribute more to performance than the other two dimensions. Nevertheless, the question of to what extent other relevant factors (Dynamism and Competitiveness in our case) are likely to intervene between each dimension of service innovation and performance remains unanswered so far. The following passage tries to answer this question.

Both dimensions of business environment were hypothesized to moderate the performance in the light of previous research but in our case they failed to do so. The results are unusual as one of the two dimensions (dynamism/uncertainty) is significantly correlated to both service innovation and performance but the other dimension is not correlated to both of them. The combined effect of both dimensions does not interact between service innovation and performance. This finding implies that in dynamically changing or uncertain business environment, mutual relationship between service innovation and performance is influenced but this effect has been offset by insignificance of competitiveness and the combined effect is no interaction. This finding also implies that managers although perceive business environment to be dynamically changing and

competitive, but either they cannot relate it to the service innovation activity or service innovation is either sometimes considered as an in-house activity with little attention to forces in the business environment.

Hence, overall, we can conclude that service innovation is multi-dimensional in the country case as evident by the fact that all three dimensions of service innovation are underscored with varying degrees and they all contribute significantly to service innovation performance. This observation is in line with the conclusions by McDermott and Prajogo (2012) and Hong et al. (2016). Business environment is perceived to be highly dynamic and competitive but respondents cannot relate it to service innovation activities.

6.1 Managerial Implications

This research study offers many valuable implications for both practice and theory. As far as its practical implications are concerned, the findings are important to a wide variety of stakeholders. Governments from the developing countries where services are significant part of their economies can use the findings of this study to formulate policies to innovate their services sectors in order to bring economic growth and well-being. Subsectors with the potential to innovate under broad services sector can be identified where sources can be channelized to innovate and improve performance. For example, the services sector in the country case has reached up to 60% and still many of its service subsectors have the huge potential to innovate. Public services are one such example. By employing findings and insights from this study, performance of the public financial services can be enhanced. Findings can be generalized and extended to other services as well. It also bids many valuable implications for managers in the wide variety of service industries and service organizations. Managers can learn, engage in and choose the optimal combination of various dimensions of service innovation to synergize performance and gain competitive advantage over rivals. They can also learn how different dimensions of service innovation interact and whether dynamism and competitiveness in the business environment play any role in determining the optimal combination of various dimensions of service innovation to boost service innovation performance and in overall performance of organizations. In this way, this study helps business and service managers in their decision making and strategy formulation.

6.2 Theoretical Implications

On theoretical front, this study offers insightful implications and bridges many gaps identified especially in the fields of service innovation management and performance management. First, it helps bring some conclusiveness to the impact of service innovation activities as each dimension of service innovation significantly impacts performance. Secondly, it fills the much-needed gap of lack of empirical studies on service innovation in developing economies with increasingly growing service sector in total GDP. There has been a void of studies on this topic in developing countries which might likely be filled with this research endeavor. Thirdly, implications are also important for the theory

on inter-relationships among various modes of service innovation as this study sheds some light on multi-dimensional nature of service innovation.

6.3 Limitations and Future Research Directions

As with most of the studies, this research study is not free of some limitations. First of all, there is a question of external validity. More specifically, to what extent the results of this study can be generalized outside the banking sector of the country case and over other developing countries. Sample size was not large enough as there were some budgetary and time constraints which might likely hamper the external validity and generalizability of the results of this study across entire service sector and across developing economies. In addition, respondents were geographically limited to the south of Punjab. All the above factors hamper the generalizability of the findings.

Future research can focus on services like hospitality, health, social, tourism, construction, and household etc. Different service innovation models, frameworks, typologies can be applied in various services which can boost the service potential in these sectors. Future research may also focus on development of sophisticated, state of the art, fully-fledged performance measurement and management matrixes to capture the multi-dimensional nature of both service innovation and performance. Cross-cultural and comparative studies across economies and sectors may be productive. Further research on strategy and process for service innovation may provide valuable insights in this area. All these research directions prompt a wide range of stakeholders to turn to this potentially promising area of research to enhance the performance of their organizations and economies and create a competitive and sustainable advantage and welfare for societies they live in.

REFERENCES

- Agarwal, S., Krishna Erramilli, M., & Dev, C. S. (2003). Market orientation and performance in service firms: role of innovation. *Journal of Services Marketing*, 17(1), 68-82.
- Awais Ahmad Tipu, S. (2011). Academic publications on innovation management in banks (1998–2008): A research note. *Innovation*, 13(2), 236-260.
- Bititci, U., Garengo, P., Dörfler, V., & Nudurupati, S. (2012). Performance measurement: challenges for tomorrow. *International Journal of Management Reviews*, 14(3), 305-327.
- Boone, J. (2000). Competitive pressure: the effects on investments in product and process innovation. *The RAND Journal of Economics*, 31(3), 549-569.
- Carlborg, P., Kindström, D., & Kowalkowski, C. (2014). The evolution of service innovation research: a critical review and synthesis. *The Service Industries Journal*, 34(5), 373-398.
- Chen, J. S., Tsou, H. T., & Ching, R. K. (2011). Co-production and its effects on service innovation. *Industrial Marketing Management*, 40(8), 1331-1346.

- Cheng, C. C., & Krumwiede, D. (2012). The role of service innovation in the market orientation—new service performance linkage. *Technovation*, 32(7), 487-497.
- Chenhall, R. H., & Langfield-Smith, K. (2007). Multiple perspectives of performance measures. *European Management Journal*, 25(4), 266-282.
- Damanpour, F., & Gopalakrishnan, S. (2001). The dynamics of the adoption of product and process innovations in organizations. *Journal of Management Studies*, 38(1), 45-65.
- De Brentani, U., & Kleinschmidt, E. J. (2004). Corporate culture and commitment: impact on performance of international new product development programs. *Journal of Product Innovation Management*, 21(5), 309-333.
- Den Hertog, P., van der Aa, W., & de Jong, M. W. (2010). Capabilities for managing service innovation: towards a conceptual framework. *Journal of Service Management*, 21(4), 490-514.
- Dess, G. G., & Beard, D. W. (1984). Dimensions of organizational task environments. *Administrative Science Quarterly*, 29(1), 52-73.
- Djellal, F., & Gallouj, F. (2009). *Measuring and improving productivity in services: issues, strategies and challenges*. Edward Elgar Publishing.
- Droege, H., Hildebrand, D., & Heras-Forcada, M. A. (2009). Innovation in services: present findings, and future pathways. *Journal of Service Management*, 20(2), 131-155.
- Du Plessis, M. (2007). The role of knowledge management in innovation. *Journal of Knowledge Management*, 11(4), 20-29.
- Durst, S., Mention, A. L., & Poutanen, P. (2015). Service innovation and its impact: What do we know about? *Investigacione Europeas de Dirección y Economía de la Empresa*, 21(2), 65-72.
- Forfás, I. (2006). *Services innovation in Ireland-options for innovation policy*. Forfás.
- Fuentes-Fuentes, M. M., Albacete-Sáez, C. A., & Lloréns-Montes, F. J. (2004). The impact of environmental characteristics on TQM principles and organizational performance. *Omega*, 32(6), 425-442.
- Gallouj, F. (1998). Innovating in reverse: services and the reverse product cycle. *European Journal of Innovation Management*, 1(3), 123-138.
- Gallouj, F. (2002). Innovation in services and the attendant old and new myths. *The Journal of Socio-Economics*, 31(2), 137-154.
- Gallouj, F., & Windrum, P. (2009). Services and services innovation. *Journal of Evolutionary Economics*, 19(2), 141.
- Gopalakrishnan, S., Bierly, P., & Kessler, E. H. (1999). A reexamination of product and process innovations using a knowledge-based view. *Journal of High Technology Management Research*, 1(10), 147-166.

- Government of Pakistan. (2016-17). Economic survey of Pakistan. [Online] Available: http://www.finance.gov.pk/survey_1617.html (July 30th, 2018).
- Hanif, M. I., Hanif, M. S., Kamran, A., Khan, R., & Yunfei, S. (2016). Knowledge Sharing and Innovation Performance Affected by HR Generic Strategies: An Empirical Study of SME's in China and Pakistan. *Journal of Business*, 12(1), 272-306.
- Hassan, S., & Al-Hakim, L. A. Y. (2011). The relationships among critical success factors of knowledge management, innovation and organizational performance: A conceptual framework. *2011 International Conference on Management and Artificial Intelligence IPEDR*, 6, 94-103.
- Hong, T. L., Cheong, C. B., & Rizal, H. S. (2016). Service Innovation in Malaysian Banking Industry towards Sustainable Competitive Advantage through Environmentally and Socially Practices. *Procedia-Social and Behavioral Sciences*, 224, 52-59.
- Hsieh, J. K., Chiu, H. C., Wei, C. P., Rebecca Yen, H., & Cheng, Y. C. (2013). A practical perspective on the classification of service innovations. *Journal of Services Marketing*, 27(5), 371-384.
- Jansen, J. J., Van den Bosch, F. A., & Volberda, H. W. (2005). Exploratory innovation, exploitative innovation, and ambidexterity: The impact of environmental and organizational antecedents. *Schmalenbach Business Review*, 57(4), 351-363.
- Jansen, J. J., Van Den Bosch, F. A., & Volberda, H. W. (2006). Exploratory innovation, exploitative innovation, and performance: Effects of organizational antecedents and environmental moderators. *Management Science*, 52(11), 1661-1674.
- Jaw, C., Lo, J. Y., & Lin, Y. H. (2010). The determinants of new service development: Service characteristics, market orientation, and actualizing innovation effort. *Technovation*, 30(4), 265-277.
- Lee, J., & Miller, D. (1996). Strategy, environment and performance in two technological contexts: contingency theory in Korea. *Organization Studies*, 17(5), 729-750.
- Lewin, A. Y., Long, C. P., & Carroll, T. N. (1999). The coevolution of new organizational forms. *Organization Science*, 10(5), 535-550.
- Matear, S., Osborne, P., Garrett, T., & Gray, B. J. (2002). How does market orientation contribute to service firm performance? An examination of alternative mechanisms. *European Journal of Marketing*, 36(9/10), 1058-1075.
- Matusik, S. F., & Hill, C. W. (1998). The utilization of contingent work, knowledge creation, and competitive advantage. *Academy of Management Review*, 23(4), 680-697.
- McDermott, C. M., & Prajogo, D. I. (2012). Service innovation and performance in SMEs. *International Journal of Operations & Production Management*, 32(2), 216-237.
- Mennens, K., van Gils, A., Odekerken-Schröder, G., & Letterie, W. (2018). Exploring Antecedents of Service Innovation Excellence in Manufacturing SMEs. *International Small Business Journal*, 36(5), 500-520.

- Menor, L. J., & Roth, A. V. (2007). New service development competence in retail banking: Construct development and measurement validation. *Journal of Operations Management*, 25(4), 825-846.
- Merrilees, B., Rundle-Thiele, S., & Lye, A. (2011). Marketing capabilities: Antecedents and implications for B2B SME performance. *Industrial Marketing Management*, 40(3), 368-375.
- Miller, D. (1987). Strategy making and structure: Analysis and implications for performance. *Academy of Management Journal*, 30(1), 7-32.
- Miller, D. (1987). The structural and environmental correlates of business strategy. *Strategic Management Journal*, 8(1), 55-76.
- Miller, D., & Friesen, P. H. (1983a). Strategy-making and environment: the third link. *Strategic Management Journal*, 4(3), 221-235.
- Miller, D., & Friesen, P. H. (1983b). Successful and unsuccessful phases of the corporate life cycle. *Organization Studies*, 4(4), 339-356.
- Morrar, R. (2014). Innovation in services: a literature review. *Technology Innovation Management Review*, 4(4), 6-14.
- Nunnally, J. C. (1978). *Psychometric Theory* (2nd Edit.) McGraw-Hill. Hillsdale, NJ.
- Oke, A. (2007). Innovation types and innovation management practices in service companies. *International Journal of Operations & Production Management*, 27(6), 564-587.
- Oke, A., Burke, G., & Myers, A. (2007). Innovation types and performance in growing UK SMEs. *International Journal of Operations & Production Management*, 27(7), 735-753.
- Ostrom, A. L., Bitner, M. J., Brown, S. W., Burkhard, K. A., Goul, M., Smith-Daniels, V., & Rabinovich, E. (2010). Moving forward and making a difference: research priorities for the science of service. *Journal of Service Research*, 13(1), 4-36.
- Ostrom, A. L., Parasuraman, A., Bowen, D. E., Patricio, L., & Voss, C. A. (2015). Service research priorities in a rapidly changing context. *Journal of Service Research*, 18(2), 127-159.
- Pawar, K. S., Beltagui, A., & Riedel, J. C. (2009). The PSO triangle: designing product, service and organization to create value. *International Journal of Operations & Production Management*, 29(5), 468-493.
- Pitt, M., & Tucker, M. (2008). Performance measurement in facilities management: driving innovation? *Property Management*, 26(4), 241-254.
- Rawson, A., Duncan, E., & Jones, C. (2013). The truth about customer experience. *Harvard Business Review*, 91(9), 90-98.
- Rogelberg, S. G., & Stanton, J. M. (2007). Introduction: Understanding and Dealing with Organizational Survey Nonresponse. *Organizational Research Methods*, 10(2), 195.

- Rogers, E. M. (2003). Elements of diffusion. *Diffusion of innovations*, 5, 1-38.
- Rogers, M. (1998). The Definition and Measurement of Innovation. *The University of Melbourne, Melbourne*.
- Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457.
- Rubalcaba, L., Michel, S., Sundbo, J., Brown, S. W., & Reynoso, J. (2012). Shaping, organizing, and rethinking service innovation: a multidimensional framework. *Journal of Service Management*, 23(5), 696-715.
- Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.
- Shang, S. S., Lin, S. F., & Wu, Y. L. (2009). Service innovation through dynamic knowledge management. *Industrial Management & Data Systems*, 109(3), 322-337.
- Storey, C., Cankurtaran, P., Papastathopoulou, P., & Hultink, E. J. (2016). Success factors for service innovation: A meta-analysis. *Journal of Product Innovation Management*, 33(5), 527-548.
- Tidd, J. (2001). Innovation management in context: environment, organization and performance. *International Journal of Management Reviews*, 3(3), 169-183.
- Tyagi, R., & Gupta, P. (2013). Gauging performance in the service industry. *Journal of Business Strategy*, 34(3), 4-15.
- Uchupalanan, K. (2000). Competition and IT-based innovation in banking services. *International Journal of Innovation Management*, 4(04), 455-489.
- Voss, C., & Zomerdijk, L. (2007). *Innovation in experiential services: an empirical view*. AIM Research.
- Wang, Q., Voss, C., Zhao, X., & Wang, Z. (2015). Modes of service innovation: a typology. *Industrial Management & Data Systems*, 115(7), 1358-1382.
- Yen, H. R., Wang, W., Wei, C. P., Hsu, S. H. Y., & Chiu, H. C. (2012). Service innovation readiness: Dimensions and performance outcome. *Decision Support Systems*, 53(4), 813-824.
- Zahra, S. A. (1996). Governance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities. *Academy of Management Journal*, 39(6), 1713-1735.
- Zahra, S. A., & Bogner, W. C. (2000). Technology strategy and software new ventures' performance: Exploring the moderating effect of the competitive environment. *Journal of Business Venturing*, 15(2), 135-173.
- Zomerdijk, L. G., & Voss, C. A. (2011). NSD processes and practices in experiential services. *Journal of Product Innovation Management*, 28(1), 63-80.