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Exploring Missing Link Among Innovation Capabilities and Service Innovation: An Evidence from Mobile Banking Sector of Pakistan

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Abstract

Innovation is one of value added mean by which service sector organizations can survive. Mobile banking sector is one of the growing sector which has brought service innovation by providing branchless banking facilities through cell phones to customers. Therefore, the aim of this work is to empirically investigate the element that possess the direct and indirect effect on association of innovation capabilities-service innovation among Pakistani mobile banking sector. Data has been gathered from 493 senior middle managers and departmental heads under random sampling strategy. Data was collected and analyzed through Hayes (2017) conditional process approach. The findings revealed that effect of innovation capabilities on service innovation was positively mediated by innovative culture. The indirect effect of absorptive capacity on both innovative culture and service innovation was also found. Results are useful for service sector as it emphasize on the significance of innovation capabilities for underpinning the service innovation.

Keywords: Innovation capabilities, innovative culture, absorptive capacity, service innovation.

Today is the era of ever-changing market dynamics due to the continuous adoption of technological advancements in business processes. Organizations are constantly striving for running their business in new ways as there is a need to further innovate in the realm of innovation itself (Chung, Choi & Du, 2017). Globalization has opened new ways of doing business for the organizations and thus sustaining the innovation in services is critical for the organizations among the market players. Thus, it is not unusual to state that innovation is a challenging task for organizations, especially in the service industries.

With an objective to sustain in the market competitive dynamics, each organization possesses the unique blend of organizational factors, internal processes, procedures, policies and technologies that further requires the continuous introduction of new products and offerings as per the market needs (Chung, Choi & Du, 2017). This results in the evolution and regulation of distinctive values, environment, and culture of each organization. Depending upon the different organizational factors, there are organizations who are quite vibrant in innovative capabilities of capturing the on-going technological advancements and business processes for the creation of organizational values while on the other hand, some organizations are less flexible and malleable towards these capabilities (Ray and Ray, 2001). This identifies that there is a need to further study the factors and forces that are shaping the service innovation and innovative capabilities of the organizations. The detailed discussion on the identification of literature gaps is made in consequent paragraphs.

Some researches have been conducted on the conceptualization of innovative capabilities (Momeini et al., 2015; Story et al., 2017; Iddris, 2016; Chamsuk, Fongsuwan, Takala, 2017). However, the review of the literature revealed that majority of the previous work has emphasized the innovative capabilities as a constituent of one or insufficient specific dimensions including product development or research and development etc. (Chamsuk et al., 2017). There could be many other possible perspectives of innovative capabilities that are neglected in literature and there is needs to further explore the

innovation capabilities in different aspects (Nisula and Kianto, 2013; Chamsuk et al., 2017). In addition, there exists no general consensus in the present body of knowledge that what are the elements that constitute the construct service innovation capabilities (Zawislak et al., 2012). It is also crucial to state that the present literature body does not also carry the general harmony on the specific operationalization of innovation capabilities. Thus, it arises the need to further empirically testify the operationalization of this construct along with the testing of some comprehensive research framework with the influential role of innovation capabilities (Breznik&Hisrich, 2014; Zawislak et al., 2012). This indicates a research gap in the current literature body.

Additionally, most of the previous researches on innovation generally addresses the concept of technological innovation in manufacturing firms. The innovation in manufacturing industries has always received the key foci while the researches on service innovation have been neglected for long (Durst, Mention and Poutanen, 2015). The field of service innovation is expanding and ever-diversifying that further needs to be explored for the validation of knowledge base of conceptions (Ostrom et al., 2010). The concept of service innovation is a relatively newer one that is less explored due to the dominance of technological and manufacturing perspectives of innovation (Durst, Mention and Poutanen, 2015). Recent digitization and growing technological advancement in business processes of service industries are other factors that have caused the more foci of researches towards the technological and manufacturing perspective of innovation (Durst, Mention and Poutanen, 2015). It highlights that there is a need for more intense research work on the area of service innovation and antecedents shaping the service innovation. It is also pertinent to mention that the economies of western counterparts are different than other developing economies in their institution, infrastructural and economic structures. This fact is also argued earlier by Hofstede (2001) who found that Pakistan, being the state in the south-Asian region, possesses a score of 70 for preference to avoid uncertainty. This score was too high in comparison to other nations of the United States (46), Canada (48), Denmark (23) and United Kingdom (35). Thus, this reflected that cultural context of Pakistan is less keen towards innovation due to the higher preference of avoiding uncertainty in comparison to West (Hofstede, 2001). This has been also supported by literature that noteworthy variances subsist among different sectors/sub-sectors in operationalization, implementation, and precursors of service innovation (Srivastava and Shainesh; 2014). The researches on service innovation conducted in West offers to be reconsidered, validated and tested for further modification, alteration and extension of theories/conception among other developing countries (Ostrom et al., 2010; Srivastava and Shainesh; 2014; Bararett et al.; 2015). It is essential to state that there is limited or negligible empirical research has been carried in Pakistani cultural settings on validation of research constructs innovation capabilities and service innovation.

This is further evident with the fact that Ince, Imamoglu and Turkcan (2016) conducted a detailed study on innovation capabilities among Pakistani hotel industry and argued that the absorptive capacity may influence the association of innovation capabilities and product or service innovativeness. Thus, there is a need to explore the effect of absorptive capacity through rigorous empirical investigation (Ince et al., 2016). This serves as research gap. Similarly, Kiani, Gillani and Ahmad (2019a) also argued that there is a need to investigate the influence of absorptive capacity and innovative culture on the association of innovation capabilities and service innovation. This also serves as research gap as indicated by Kiani et al., (2019a).Thus, there is a need to study the influence of absorptive capacity and innovative culture among the association of innovation capabilities and service innovation. Accordingly, this work intends to fill these identified gaps by empirically investigating the association between the key constructs through the conditional process analysis. Consequently, this work attempts to address these identified research gaps and serves as a rationale for empirically testifying the hypothesized theoretical model of this study among the cultural context of one of emerging Pakistani service sector that is mobile banking sector. On the basis of these arguments, it may be stated that the problem statement of this research study liesat the scope of service innovation, innovation capabilities and the nature of direct and indirect relations between them. The guiding problem statement of this work is, “There is a need to empirically test the direct association among the innovation capabilities - service innovation and also the indirect influence of innovative culture and absorptive capacity on the direct linkage of innovation capabilities – service innovation”.

In pursuance of the stated problem, this study is based on five prime research objectives (i) to testify the effect of innovation capabilities on the service innovation, (ii) to

study the mediation influence of innovative culture on the direct relationship of innovation capabilities and service innovation, (iii) to study the moderation influence of absorptive capacity on the association of innovation capabilities and innovative culture, (iv) to study the indirect effects of innovation capabilities on service innovation via the mediation of innovative culture and moderation of absorptive capacity, and finally (v) to suggest the stakeholders with some key practical suggestions for bringing some more strategic and proactive measures. This study also efforts to answer the following crucial research-questions that are;

a) Does innovation capabilities possess a significant affection the service innovation?
b) Does innovative culture mediate the affect of innovation capabilities on the service innovation?
c) Doesabsorptive capacity moderate the associationof innovation capabilities with innovative culture?
d) Do the innovation capabilities carries the indirect effect on service innovation (through significant mediation effect of innovative culture) that is further positively moderated by absorptive capacity?

The significance and contribution of this study can also be evident with the fact that it attempts to close the essential gaps of existing literature body (identified by the existing researches Kiani et al., (2019a, 2019b) Ali et al., (2019) Ince et al, (2016) by testing and validating the western conceptualization of innovation capabilities and service innovation in Pakistani cultural settings. This work attempts to bring homogeneity in the understanding of these constructs through empirical analysis as the economies of western counterpart are quite different from the other developing countries (Bararett et al., 2015) as there were few or limited researches have been conducted on these conceptions in the Pakistani mobile banking context. The significance of this work are also apparent from the statement that this study contributes in the body of service literature by exploring the underlying factors (innovative culture and absorptive capacity) affecting the service innovation through the conditional process analysis approach (Hayes, 2017). Moreover, this research work attempts to yield valuable guidelines and recommendations for the practitioners of Pakistani mobile banking industry that highlights some critical success factors. Table 1 briefly illustrates the research gaps and the research scheme adopted to answer those research gaps as;

Table 1. Illustrating Research Gaps and Development of Research Hypotheses

Summarizing Research Gaps	**Research Question Developed Accordingly**	**Proposed Hypotheses Developedin accordance to research questions**
Gap – One: The review of literature indicated the need to empirically investigate affect of innovation capabilities on the service innovation (Ali et al., 2019; Teece, 2018)	**R.Q- 1:** Does innovation capabilities possess a significant affect on the service innovation?	In order to answer research question one, the hypothesis one has been developed.
Gap – Two: The review of literature indicated the need to empirically investigate mediation affect of innovative culture on the service innovation (Kiani et al., 2019a)	**R.Q-2:** Does innovative culture mediate the affect of innovation capabilities on the service innovation?	In order to answer research question two, the hypothesis two has been developed.

Gap – Three: There is a need to empirically investigate the moderation effect of absorptive capacity on the relationship of innovation capabilities and innovative culture (Ince et al., 2019; Kiani et al., 2019a)	**R.Q-3:** Does absorptive capacity moderate the association of innovation capabilities with innovative culture? **R.Q-4:** Do the innovation capabilities carries the indirect effect on service innovation (through significant mediation effect of innovative culture) that is further positively moderated by absorptive capacity?	In order to answer research question three and four, the hypotheses three and four have been developed.

Literature Review and Development of Hypotheses

Generally, the firm's innovative capability is thought of those capabilities, abilities, and resources of the organization that enables the firms to generate innovation as an outcome. Some researchers have explained the innovation capabilities as those competencies of a firm that enable the members in establishing and executing the more improved processes or technologies or new offerings (Knowles, Hansen & Dibrell; 2008). The literature body on the construct service is classified in three different perspectives in theories of management. The first perspective of this concept endures the 'innovation in services products' that is new, improved and novel services may be offered to the customers (Storeyet al., 2016; Hertogett al., 2010). This perspective of service innovation upholds the majority of service development strands of innovation in existing literature (Nijssen et al., 2006). This perspective of service innovation is also contrasted with the conception of technological innovation in literature as the latter one defines the innovation in products. Thus, the literature explains that the innovation in the product is quite different and distinguishable from innovation in services and therefore the service innovation needs to be studied as a separate conception (Miles, 1993). Present literature on innovation pertains the second perspective of conception on 'innovation in service processes' that states the service innovation as the new, improved and novel way of designing, making, producing and delivering the service processes. This perspective of service innovation upholds the numerous researches on the strands of new service delivery mechanism in the literature (Lenfle and Midler, 2009). The third perspective views the service innovation concept as 'innovation in service firms/organizations/ industries' in existing theories. A number of researches have been carried in this perspective taking in part with the concept of organizational innovation and management of innovation processes (van Riel, Lemmink, and Ouwersloot, 2004).

Similarly, Ali, Peters, Khan, Ali and Saif (2019) have in-depth studied the innovation capabilities in cultural context of Pakistan hotel industry and came up with the conclusion that the capabilities of the organization to continuously acquire the dynamic needs of markets and customers are linked with its capabilities to perform functional activities in desired direction (Ali et al., 2019). Kiani, Gillani and Ahmad (2019a) studied innovation capabilities in cultural context of Pakistani cellular companies and concluded that innovation capabilities serves as precursor to service innovation among Pakistani cellular firms. They further highlighted a need to explore the hidden factors that influences their relationship (Kiani et al., 2019a).

Thus, it is not unusual to state that innovation is a challenging task for the organizations, especially in the service industries. Basically, each organization possesses a certain unique combination of organizational factors, internal processes, and technologies that are used for the continuous launch of different products/services as per the market needs. This results in the establishment of distinguishing values and culture of each organization. Depending upon these different organizational factors, there are organizations who are quite vibrant in innovative capabilities of capturing the on-going

technological advancements and business processes for the creation of organizational values while on the other hand, some organizations are less flexible and malleable towards these capabilities. In light of above discussion, the below mentioned research hypothesis is proposed as,

H_1: Innovative capabilities carries a significant effect on service innovation.

Teece (2018) have defined the innovation capabilities as those abilities and resources of the firm that enables the firms to generate innovation as an outcome. Each and every organization in the real world possess some parameters of innovation capabilities but it does not imply the fact that all the organizations are continuously innovating. This indicates that there are some potential factors that are complementary and essential for innovation capabilities to prove sufficient enough to be innovative for service organizations (Preez et al., 2006). Thus, it implies that innovation capability is a necessary condition for the organization to innovate but not sufficient enough for innovation (Teece, 2018).

Literature has indicated that it is the culture of the organization that enables the innovative capabilities of the organization (Storey et al., 2016).Culture is embedded within the firms and is reflected by what and how things are done by the firm (Teece, 2018). It basically comprises of the knowledge, skills embedded within the processes and activities of the firm's systems. Organizations through culture allow the access of the relevant knowledge from the external environment. This acquired knowledge is then translated into the new business opportunities by the innovative capabilities of the firm. Thus, the outcome is the generation of more innovative and new services. Kiani, Ahmad and Gillani (2019b) conducted a detailed study on the innovation capabilities as precursor of business model innovation among cultural context of Pakistan and argued that there is a need to explore the impact of innovation culture on the innovation capabilities role as precursor. They have called for the future researches to overlook the influence of innovation capabilities in relation with the innovative culture among Pakistani cultural context (Kiani et al., 2019b).In light of above discussion, the following hypothesis is proposed as,

H_2: Innovative culture mediates the association among innovative capabilities and service innovation.

However, it has also been found in the existing literature that successful service innovation requires effective and timely decision making so that the growing market changes of the competitive worldmay be managed. Absorption of previously gained knowledge in this manner forms the basis for the right decision making (Mennens, Gils, Schroder and Letterie, 2018). As the precursor of decision mechanisms (i.e gathering information and assimilation of the relevant knowledge) loses its essentiality if the valued knowledge is not completely absorbed by the organization for future references (Preez et al., 2006). The absorption of right and relevant knowledge may serve the organization with the innovative capabilities initiatives towards positive innovative outcomes and vice versa. This predicts that the absorptive capacity of the organization is an essential factor that may affect the extent of innovative capabilities and service innovativeness relationship. Ince, Imamoglu and Turkcan (2016) also argued that there is a need to explore the effect of absorptive capacity on the association of innovation capabilities and service innovativeness and this serves as a research gap (Ince et al., 2016). Based on this discussion, research hypotheses are proposed as,

H_3: Absorptive capacity moderates the association among innovative capabilities and innovative culture.

Thus in light of these reviewed literature and an attempt to address the identified research gaps have further led to the establishment of a hypothesized framework of this study (as shown in figure 1). It illustrates that there exists an indirect linkage among the relationship of criterion variable (innovation capabilities) and predictor variable (service innovation). This indirect affect comprises of the mediation effect of innovative culture between the two study variables (that are innovative capabilities and service innovation). This mediation effect is further positively moderated by the absorptive capacity of the organization. For the empirical testing of this research model, hypothesis 4 has been formulated as,

H_4: An innovative capabilities possessthe indirect effect (via thesignificant mediating effect of innovative culture) on predictor variable service innovation that is further positively moderated by absorptive capacity.

The work endeavors to close these discussed research gaps identified by Ali et.,(2019), Ince et al., (2019) Kiani et al., (2019a, 2019b) by empirically testing the operationalization of innovation capabilities and service innovation in cultural settings of Pakistan. Confirmatory factor analysis, reliability, discriminate validity is conducted to analyze the application of measuring instrument in the Pakistani context. Furthermore, it also addresses the need to further explore the other possible factors affecting the interrelationship among innovation capability and the service innovation by conducting the conditional process analysis. In this way, four testable research hypotheses are formulated.

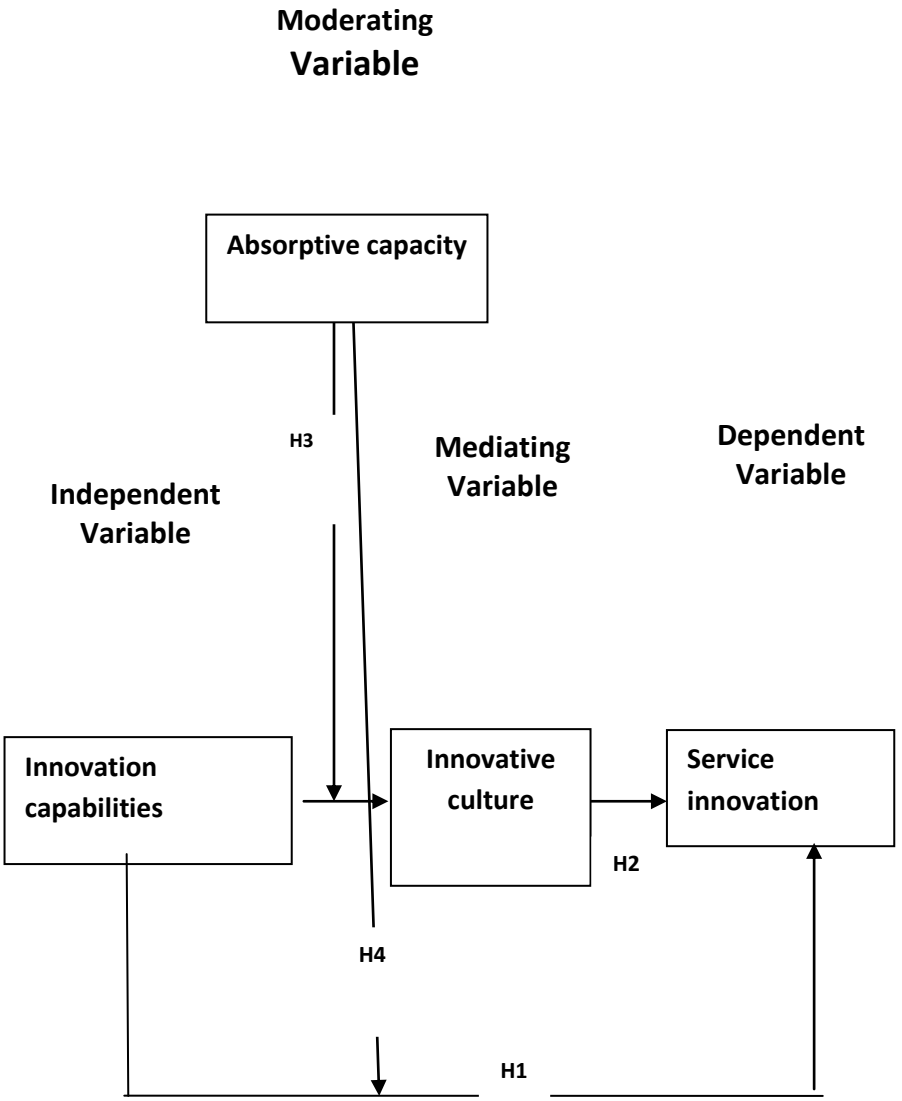

Figure 1. Theoretical Mo Study

Research Methodology

Data Collection

The self-administer research questionnaire was used for data collection. The population frame constitutes the Pakistan mobile banking industry. There is five payment

mechanism operating with innovative services in mobile banking industries. These includes (i) Easy-paisa (operated by Telenor and Tameer-bank), (ii) Omni (operated by United-bank), (iii) Mobicash (operated by Mobilink and Waseela-bank), (iv) Timepey (operated by Zong and Askari-bank) and (v) Upayment (operated by Ufone in connection to multi financial institutes such as Summit-bank, Soneri-bank, Habib-bank and Bank-Al-Habib. The sample size constitutes 493 respondent selected nationwide through simple random sampling method. The respondents were the chief executives, departmental heads and senior middle managers. The upper management and middle management of mobile banking sector are selected as unit of analysis because the concepts of innovation capabilities and service innovation are best reflected among them. It is also pointed by some researches that the innovation capabilities and service innovation can be measured from those organizational members that carries the coherent knowledge about all the vital business processes (Janssen et al., 2015; Hertog et al., 2010; Riel et al., 2016). These researchers further clarified that these organizational members may include chief executives, senior executive member and senior middle managers of the organization (Janssen et al., 2015; Hertog et al., 2010; Riel et al., 2016).

Instrument Development

The hypothesized framework of this research work comprises of four research constructs that are innovation capabilities as an independent variable, innovative culture as mediating variable, absorptive capacity as moderating variable and service innovation as a dependent variable. This work hasadopted the existing measures of constructs from earlier established researches.

Innovative capabilities have been operationalize into five sub constructs that are (i) sensing users need, (ii) sensing technological options, (iii) conceptualizing, (iv) coproducing and orchestring, and finally (v) the scaling and stretching (Hertog, Van der and Jong, 2010). Fifteen item research instrument developed by Janssen et al. (2015) was adopted for the measurement of the independent variable that is innovation capabilities.

Absorptive capacity has been operationalized into two sub-constructs of potential absorptive capacity and realized absorptive capacity (Zahra and George, 2002). Potential absorptive capacity refers to the capacity of an organization to identify, acquire the knowledge from external sources and then analyze, interpret, understand the acquired knowledge. On the other hand realized absorptive capacity refers to the capacity of an organization to transform the newly acquired knowledge with the existing routines and operations of the organization (Zahra and George, 2002). This research work has adopted the six items instrument developed by Zahra and George (2002) for the measurement of absorptive capacity. For the measurement of innovative culture (unidimensional construct), six items have been adopted from the study of Hurley and Hult (1998).

Service innovation (dependent variable) has been operationalize into six sub-constructs that are (a) service concept, (b) technological delivery system, (c) organizational delivery system, (d) customer interaction, (e) value system and lastly, (f) revenue model (Janssen et al., 2015). For the measurement of service innovation, thirteen items research instrument developed by Janssen et al., (2015) has been adopted.

Results and Findings

The collected data was analyzed using SPSS version 20.0 and AMOS version 21. As the research measures innovation capabilities and dependent variable service innovation have been earlier validated in cultural settings of some Western countries i.e. Netherlands and Dutch (Janssen, Castaldi and Alexiev, 2015). Therefore, this research work has conducted confirmatory factor analysis to check the psychometric properties of research constructs in Pakistani cultural context. Discriminate validity analysis is also conducted to further validate the psychometric properties of the research measure. Hypotheses testing has been made by using Hayes (2017) explained regression-based process analysis.

Sample Demographic Analysis

Total 493 completely filled self-administer questionnaires were received. Among these 493 responses, 187 were the female respondents representing the 37.93 percent of the total population while the remaining 306 were male respondents (62.07 percent) as detailed in table 1.

Table 1. *Sample Profile of Respondents*

Demographic	Categories	Frequency	Percent

1	Gender	Female	187	37.93
		Male	306	62.07
		Total	**493**	**100**
2	Age	20 year – 30 years	117	23.73
		31 years – 40year	287	58.21
		More than 40 years	89	18.06
		Total	**493**	**100**
3	Education	Graduate	44	8.92
		Masters	357	72.41
		Post Masters	92	18.67
		Total	**493**	**100**

Reliability and Validity Analysis

This work has conducted the confirmatory-factor-analysis to check the psychometric properties of these research measures. The results revealed that all the loadings of items lie between the 0.71 – 0.92 that falls in acceptable range (Hair et al., 2010).

In addition, the model fit indices of each research construct have also been checked during confirmatory factory analysis as depicted in table 02. The results indicated that all the research constructs show the good model fit with the CMIN/df (values of 2.1, 1.67 and 1.93) that lies between acceptable zero to three. The good fitness measures of measurement model such as CFI, TLI, NFI and GFI were also found to be acceptable that is above 0.9 (Bentler and Hu, 1999). Similarly, the value of RMSEA for all constructs were found to be acceptable as its value should be less than 0.8 (Browne and Cudeck, 1993). Hence, it can be stated on the basis of these results that all the psychometric properties of four research measures are acceptable.

Table 2. *Confirmatory factor analysis results*

S #	Innovation capabilities	Item #	Factor Loadings
1	Sensing user needs	1	0.87
		2	0.71
		3	0.83
2	Sensing technological options	4	0.89
		5	0.83
		6	0.79
3	Conceptualization	7	0.74
		8	0.85
		9	0.81
4	Coproducing and orchestrating	10	0.91
		11	0.83
		12	0.86
5	Scaling and stretching	13	0.74
		14	0.79
		15	0.76
Whereas CMIN/ df =1.67, GFI=0.921, TLI=0.937, NFI=0.942, CFI=0.917, RMSEA=0.073			

S#	Service innovation	Item #	Factor Loadings
1	Service concept	16	0.76
		17	0.71
		18	0.79
2	Customer interaction	19	0.85
		20	0.83
3	Value system	21	0.81
		22	0.86
4	Revenue model	23	0.74
		24	0.81
5	Org delivery System	25	0.92
		26	0.87
6	Technological delivery system	27	0.82
		28	0.86
Whereas CMIN/ df =1.93, GFI=0.937, TLI=0.942, NFI=0.967, CFI=0.934, RMSEA=0.081			

S #	Innovative culture	Item #	Factor loadings

S #	Absorptive capacity	Item #	Factor loadings
1	Potential	34	0.84

1	Innovative culture (unidimensional)	29	0.83
		30	0.89
		31	0.78
		32	0.76
		33	0.91

2	absorptive capacity	35	0.81
		36	0.86
	Realized absorptive capacity	37	0.78
		38	0.74
		39	0.79

Whereas CMIN/ df =2.1, GFI=0.919, TLI=0.925, NFI=0.909, CFI=0.901, RMSEA=0.059

Discriminate-validity-analysis checks whether the measures of research variables are evidently distinct from each-other (Hair et al., 2010). It is conducted through Pearson correlation statistical technique. Table no 3 -5 depicts the results of discriminate validity analysis along with the mean, standard deviation, average variance extracted and composite reliability.

Table 3.*Correlation Analysis among Research Construct of Innovation Capabilities*

Constructs	**1**	**2**	**3**	**4**	**5**	**Mean**	**S.D**	**AVE**	**Alpha**
(1) Sensing user needs	1					4.17	.732	.650	.706
(2) Sensing technological options	.094 .001	1				4.01	.774	.702	.721
(3) Conceptualization	.115 .000	.099 .000	1			4.43	.911	.642	.748
(4) Coproducing and orchestring	.104 .026	.124 .000	.066 .000	1		3.96	.937	.752	.872
(5) Scaling and stretching	.015 .000	.232 .002	.018 .002	.193 .000	1	4.02	.929	.583	.702

The results of correlation analysis for all constructs (as depicted in table 3, 4, and 5) shows that it is negligible or very week correlation exist among the sub-constructs of the research variables. These results reflect that the sub-constructs of all constructs are significantly distinguishable.

Table 4. *Correlation Analysis among Research Construct of Service Innovation*

Constructs	**1**	**2**	**3**	**4**	**5**	**6**	**Mean**	**S.D**	**AVE**	**alpha**
(1) Service concept	1						4.32	.931	.569	.759
(2) Customer interaction	.372 .600	1					3.87	.829	.706	.914
(3) Value system	.091 .000	.201 .000	1				4.03	.891	.698	.885
(4) Revenue system	.177 .000	.011 .000	.183 .000	1			4.11	.887	.602	.739
(5) Organizational delivery system	.171 .000	.095 .000	.011 .000	.054 .000	1		3.75	.899	.802	.832
(6) Technological delivery system	.043 .000	.065 .000	.011 .000	.032 .000	.201 .000	1	4.22	.875	.706	.791

In addition, the reliability of all the sub-constructs was also calculated along with the average variance extracted values and mean. The result shows that the reliability of all the sub-measures are satisfactory (above the 0.6 value). Similarly, the values of the average variance extracted of sub-constructs of all the variables are also found to be significant (above than 0.5) as shown in table 5.

Table 5. *Correlation Analysis among Research Construct of Absorptive Capacity*

Constructs	**1**	**2**	**Mean**	**S.D**	**AVE**	**alpha**
(1) Potential absorptive capacity	1		3.96	.892	.700	.873
(2) Realized absorptive capacity	.016 .000	1	4.17	.874	.593	.845
Innovative culture variable	---	---	4.21	.737	.699	.719

Hypotheses Testing

This research work has used the conditional process approach of Hayes (2017) for the empirical analysis of developed hypotheses. For testing the hypotheses 1 and 2, Hayes (2017) based mediation analysis (model 4) was conducted with innovation capabilities as an independent variable, innovative culture as mediator and service innovation as a dependent variable. The results are tabulated in table 6. The results show that 67.5 % of service innovation is explained by both the innovative culture and innovative capabilities with p-value (.000) as shown in the 3rd column headed by "service innovation".

Table 6. *Hayes (2017) based Simple Mediation analysis*

Antecedent		**Innovative culture**					**Service innovation**			
		Coeffi.	**S.E**	**T**	**P**		**Coeffi**	**S.E**	**t**	**p**
constant	i_1	1.125	.0127	88.42	.000	i_2	1.214	`	5.40	.000
Innovative capabilities	**a**	.8255	.0037	222.6	.000	***c'***	.7483	.193	4.68	.073
Innovative culture	**--**	--	--	--	--	**B**	.2402	.016	11.4	.000
							R^2 = 0.675, F (2, 491) = 515.8 p = 0.000			

Table 7 shows that thedirect-effect of innovation capabilities are statistically significant with the t-value (1.49) < 02 and p-value (.073) > 0.05. It also shows that the indirect effect of innovation capabilities on service innovation is also statistically significant with the beta value of .7483. Finally, the total-effect of innovative capabilities is found by adding both effects of direct and indirect as c = (0.7483 + 0.2402) = 0.9885. This is also statistically significant with the tvalue (18.17) greater than 2 and the p value (.000) less than 0.05. Thus, it proves Hypothesis 2 as correct with the indirect effect of .7483 and the total effect of .9885 among the variables innovative capabilities and service innovation. These results also reflects that the significant effect of innovation capabilities exists on the dependent variable service innovation through the mediation effect. Thus, it also evidences the Hypothesis 1to be correct.

Table 7. *Estimation of Effects of Mediation Analysis*

Total-Effect				Direct-Effect				Indirect-Effect	
Effect	**S.E**	**T**	**P**	**Effect**	**S.E**	**T**	**P**	**Effect**	**Boot-S.E**
.9885	.039	18.17	.000	.2402	.016	1.49	.073	.7483	.2445

In order to testify the hypotheses 3 and 4, this research work has used the model 8 of Hayes (2017) regression-based process approach in SPSS. The results showed that the 82.68% ofvariance in dependent variable service innovation is determined when regressed against the innovation capabilities as independent, innovative culture as mediating and absorptive capacity as moderating variable with the significant p-value of .000 < .05.

Table 8. *Hayes (2017) based Mediation Moderation Analysis*

Antecedent	**Innovative culture**				**Service innovation**			
	Coef.	**SE**	**T**	**P**	**Coef.**	**SE**	**T**	**P**
Constant	2.371	.1102	21.51	.000	.6806	.755	9.01	.000
Absorptive capacity	.2540	.0200	12.71	.000	.1685	.113	14.8	.000
Innovative capabilities	.5756	.0197	29.17	.000	.2403	.016	1.49	.073
Innovative culture	--	--	--	--	.1116	.022	5.03	.000
Interaction – 1	.0433	.0046	9.403	.000	--	--	--	--
Interaction – 2	--	--	--	--	.0813	.024	3.30	.001
					R^2 = 0.8268, F (2, 491) = 266.2 p = 0.000			

The results also indicate that the absorptive capacity significantly moderates the association between the innovative capabilities and innovative culture throughbeta-value of .2540, t-value (12.71 > 2) and p-value (.000) as mentioned in the second column headed as “innovative culture” in table 8. Hence, Hypothesis 3 stands valid. Furthermore, it is also found that the effect of service-innovation-capabilities is positively mediating by the innovative culture with beta-value .1116, t-value 5.03>2 and p-value.000, that is further positively moderated by absorptive capacity with the beta value .1685 and significance value of .000<.05. Thus, our Hypothesis 4 also stands to be correct in light of this statistical analysis.

Discussion

This study has attempted to investigate the extent to which innovation capabilities affects service innovation and what are the underlying factors that influence the association of innovation capabilities and service innovation. The findings of this study revealed that higher innovative capabilities produces higher service innovation. This fact is

also supported by the existing researches that states that innovation capabilities serves as precursor to service innovation (Kiani et al., 2019a; Ali et al., 2019; Janssen et al., 2015; Hertog et al. 2010). The findingsalso revealed that innovation capabilities are key antecedent factor not only for service innovation but as well as for sustaining the innovative culture in the organization. It reflects that the officers who are relatively more inclined towards the service innovation capabilities would achieve more innovative culture, which consequently brings the higher service innovation. Thus, the findings revealed the positive mediation effect of innovative culture among the innovation capabilities and service innovation. These findings serve to fill the research gap who indicated that theoretically, there may exists association among innovation capabilities, innovative culture and service innovation, however there is a need to empirically investigate the nature of relationship among them (Kiani et al., 2019b; Ali et al., 2019; Kiani et al., 2019a). These findings are also in line with these mentioned existing researches. Another findings of this study indicated that there exists a positive moderation effect of absorptive capacity on the relationship of innovative capabilities and service innovation. It was found that the absorptive capacity plays an essential role in affecting the strength of two critical associations of innovative capabilities - innovative culture and innovative capabilities – service innovation. The finding revealed that the increase in absorptive capacity would produce increase in service innovation plus it would also yield the additional increase in service innovation due to interaction effect with innovation capabilities. These findings serve to fill the research gap who theoretically argued that there may exists the association among innovation capabilities, service innovation and absorptive capacity, however there is a need to empirically investigate their nature of relationship (Kiani et al., 2019b; Ince et al., 2016). Thus, all these findings of this study are supported by the previous literature as discussed.

Managerial Implications

The findings of this research work yield some essential recommendations for the practitioners of the mobile banking industry of Pakistan. The findings revealed that promoting the innovative culture within the organization further encourages the innovative capabilities of the firm to get improved, develop and strengthen in bring the innovative services on the board. A strong innovative culture can be established by developing a welcoming response to the innovative proposals. Management should actively seek innovative ideas and the new ideas or proposals may not be resisted at all. Employees and managers may be encouraged for more experimentation and creative processes. This is how an organization can build up a strong innovative culture among the members.

In addition to this, the practitioners need to encourage their subordinates and member to eagerly seek external information relating to work-related experiences so that they can utilize this information as per future needs. Employees need to keep on updating their work-related skills/knowledge so that they can better apply their knowledge in doing assigned tasks. This learning of work-related knowledge can either be achieved through seminars, workshops, training courses or employee self-learning approaches. Thus, the organizations need to focus on these parameters so that the absorptive capacity of their organization gets to improve and strengthen. It is pertinent to mention here that one of the crucial findings of this research work is the influencing role of absorptive capacity in innovative capabilities and service innovation association. Higher and stronger the absorptive capacity of the organization would yield positive and greater service innovation through innovative capabilities. Thus, practitioners need to focus on this aspect for better hopes.

Lastly, this research work provides a validated research measures to further testify the extent of innovation capabilities, absorptive capacity and service innovation for the organization. This would help the practitioners of banking and cellular companies (existing as well as those emerging in mobile banking industries with new innovative solutions) to overview or capture a glimpse of these conceptions possess by their organization.

Avenues for Future Research

This study possesses certain limitations that further directs the new possibilities for future researches. This work has exclusively considered the innovative capabilities as an antecedent of service innovation, however, the aspect of learning are not covered. Forthcoming researches are suggested to check the role of learning capability (may persists or not) in parallel with innovative capabilities. The future researches may also explore the role of knowledge management strategies such as knowledge retention on the association of innovation capabilities and service innovation. In addition to this, further

exploration of the consequence of service innovation in terms of service quality or customer satisfaction may also provide a vital direction for new researches. Furthermore, this work has validated and measured the conceptions of service innovation and innovative capabilities in the cultural context of Pakistan only. More empirical studies are required from different economies for the universal agreement and understanding of the variables conceptions.

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Appendix – Survey Questionnaire

(A) Innovation Capabilities

How much do you agree with each statement?

1
_____2_____3_____4_____5_____6_____7

Strongly Disagree Disagree Slightly DisagreeNeutral Slightly Agree Agree Strongly ree

Sensing user needs

1	We systematically observe and evaluate the need of our customers	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2	We analyze the actual use of our services	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3	Our organization is strong in distinguishing different groups of users and market segments	**1**	**2**	**3**	**4**	**5**	**6**	**7**

Sensing technological options

4	Staying up to date with promising new services and technologies is important for our organization	1	2	3	4	5	6	7
5	In order to identify the possibilities for new services, we use different information sources	1	2	3	4	5	6	7
6	We follow which technologies our competitors use	1	2	3	4	5	6	7

Conceptualizing

7	We are innovative in coming up with ideas for new service concepts	1	2	3	4	5	6	7
8	Our organization experiments with new service concepts	1	2	3	4	5	6	7
9	We align new service offerings with our current business and processes	1	2	3	4	5	6	7

Coproducing and orchestrating

10	Collaborations with other organizations helps us in improving or introducing new services	1	2	3	4	5	6	7
11	Our organization is strong in coordinating service innovation activities involving several parties	1	2	3	4	5	6	7
12	Our organization is efficient in initiatives and maintaining the partnerships	1	2	3	4	5	6	7

Scaling and stretching

13	In the development of new services, we take into account our branding strategy	1	2	3	4	5	6	7
14	Our organization is actively engaged in promoting its new services	1	2	3	4	5	6	7
15	We introduce new services by following our marketing plan	1	2	3	4	5	6	7

(B) Service Innovation

Service Concept

16	Our organization developed new service experiences or solutions for customers.	1	2	3	4	5	6	7
17	We combined existing services into a new formula	1	2	3	4	5	6	7
18	We developed a new way of creating value for ourselves and our customers	1	2	3	4	5	6	7

Customer interaction

19	Our organization developed new channels for communicating with its customers	1	2	3	4	5	6	7
20	The way we have contact with our customer is renewed	1	2	3	4	5	6	7

Value System

21	The role of external parties in producing our services is renewed	1	2	3	4	5	6	7
22	We involved new partners in the delivery of our services	1	2	3	4	5	6	7

Revenue Model

23	By introducing new services, we changed the way we generate revenues	1	2	3	4	5	6	7
24	The way we get paid is altered	1	2	3	4	5	6	7

Organizational delivery system

25	We changed our organization in order to produce our new services	1	2	3	4	5	6	7
26	Our production of new services requires new skills from our employees	1	2	3	4	5	6	7

Technological delivery system

27	Technology plays an important role in the renewed production of our services	1	2	3	4	5	6	7
28	We renewed our service offerings by new or different use of ICTs	1	2	3	4	5	6	7

(C) Innovative Culture

How much do you agree with each statement?

1
_____2_____3_____4_____5
sagree DisagreeNeutral Agree Strongly Agree

29	Innovation proposals are welcome in this organization.	1	2	3	4	5
30	Management actively seeks innovative ideas	1	2	3	4	5
31	Innovation in perceived is not risky and resisted.	1	2	3	4	5
32	People are not penalized for new ideas that do not work	1	2	3	4	5
33	Program / project managers promote and support innovative ideas, experimentation and creative processes	1	2	3	4	5

(D) Absorptive Capacity

Potential absorptive capacity

34	I actively seek external information understand it, record it for future reference.	1	2	3	4	5
35	I actively ask for work related experiences from others.	1	2	3	4	5
36	I know clearly what is going on with my works/my unit / department / organization	1	2	3	4	5

Realized absorptive capacity

37	I am able to apply what I have learnt in solving real world problems related to my works.	1	2	3	4	5
38	I usually update my skills and knowledge through participating in seminars, workshops, training courses and self-learning.	1	2	3	4	5
39	Overall I understand and able to apply knowledge that I have learned in doing my works.	1	2	3	4	5

E) DEMOGRAPHICS

40. Gender: Male and Female Organization:
_____

41. Age: (1) 20yrs– 30yrs (3) 31yrs– 40yrs (4) Above than 40yrs

42. Education: (1) Graduate (2)Masters (3) MS, MPhil and PhD