

Learning Adaptation and Motivation as a Precursor of Innovation

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Abstract: Telecom is one of the most competitive sectors that is bringing a digital revolution by introducing numerous e-services. Therefore, this study aims to study factors contributing to innovation among Pakistani Telecom sector. The data has been collected from 491 respondents of four cellular companies through random sampling technique. Regression analysis using the process macro approach is carried out to analyze the data. The results revealed learning processes possess a positive indirect effect on organizational innovation (through significant mediation effect of learning adaptation) that is further positively moderated by a motivation to perform. It serves as a guide for practitioners to develop strategies aimed to enhance innovation. This study comprehends the need for managers to focus on strategic parameters that could foster new avenues of innovation. The study contributed to the body of literature as previously negligible empirical research has been conducted to explore the role of learning adaptation and motivation etc.) as the precursors of innovation.

Keywords: Organizational innovation, Organizational learning, Learning adaptation, Motivation, Pakistani telecom sector

1. Introduction

Due to globalization and growing technological advancements, organizations are now in a tug-of-war for the pursuit of continuous innovation. The internet of things and e-commerce has further fueled the competition by increasing the accessibility of information to customers and businesses relating unique product/services on instant clicks. No doubt, the profit margins and innovativeness have become an

emerging challenge for the business world (Khan *et al.*, 2020). Businesses cannot achieve innovativeness through typical means and processes. Therefore, there is a dire need to continuously innovate for organizations in order to ensure sustainability (Alhakimi and Mahmoud, 2020).

Organizations need to learn on a dynamic basis in order to be innovative otherwise it will become hard for organizations to survive (Li and Asim, 2019). It can be said that if learning is not the only tool but it is one of the most crucial variables to enhance innovation in organizations (Fang *et al.*, 2016; Li *et al.*, 2021; Naseem *et al.*, 2020). In order to enhance the extent of learning, individuals of the organizations have to acquire new knowledge i.e. mergers & acquisitions, seminars, workshops, conferences, consultants, reports and newsletters e.tc (Adu *et al.*, 2020). Later on, this knowledge is transferred to other employees of the organization which ultimately is stored in the memory of the organization in form of databases, systems, and culture (Huber, 1991). There is no common definition of organization innovation as different researchers from time to time have operationalized the construct differently according to their context (Zanjirchi *et al.*, 2019). Organizational innovation has been explained as encouraging new products, services, ideas or bringing newness in existing product service and ideas (Nguyen and Le, 2019). Traditionally the construct was measured in two major dimensions i.e. technical innovation & administrative innovation. Later-on, the third dimension i.e. market innovation has also been incorporated in the conceptualization of the latent construct by Popadiuk and Choo (2006) however, there still exists a gap relating to the validation of operationalization of innovation especially from the eastern part of the world (Capello, 2017)

Organizational innovation is linked with organizational learning in a way that higher learning brings higher chances of innovation (Fang *et al.*, 2016). However, there is a need to explore empirical evidence for the missing link in form of mediators and moderators that channelize and influence the relationship of both constructs. In this regard, evidence from regions other than the western part of the world is more required as there are merely any studies emphasizing the validation of innovation through learning in presence of other variables affecting and influencing the relationship (Ugurlu and Kurt, 2016).

In Pakistan, the telecom sector is the most competitive sector as the emergence of many innovative business models through the integration of cellular companies is facilitating the general public as well as contributing to the digital economy of Pakistan (Kiani *et al.*, 2019). Thus, it would not be wrong to claim that the telecom sector of Pakistan is the most progressive sector in terms of innovation as more technological advancements and new business ideas are shaping the competitiveness among the market players. The telecom sector of Pakistan consists of only five players serving almost eighty-six percent of the population of the country (PTA, 2017). The growing needs of market dynamics, technological advancements, the emergence of new business ideas through digital media, the introduction of branchless banking activities, facilitation of health services through mobile apps all these factors are heavily contributing to the need for being innovativeness for the cellular companies. It has become very difficult for organizations to compete by offering their typical products/services. Presently, customers are offered new products and services such as mobile utility bill payments, mobile banking, money transfer and tracking systems in the last few years. However, it is not the end rather the start of a long journey towards the digital economy of Pakistan (PTA, 2017). Thus, the cellular companies need to work hard to bringing innovation and this innovation can be enhanced by gaining knowledge from external environmental changes. It is essential to claim here that there are very negligible researches that have been conducted on organizational

learning processes innovation specifically in the cultural context of Pakistan. This further lays the foundational need of this research work to explore these conceptualizations in the cultural dynamics of the Pakistani nations.

Thus, in order to fill these identified gaps, this research work aims to study the concepts of learning processes, learning adaptation and innovation in telecom sector of Pakistan. The objectives of this work is to empirically investigate elements that may affect the relationship of organizational learning processes and innovation. This study endeavors to answer the below-mentioned research questions;

- a) To what extent organizational learning processes impact organizational innovation?
- b) To what extent the learning adaptation mediates between organizational learning and innovation?
- c) To what extent the motivation of employees moderates between organizational learning and learning adaptation?
- d) To what extent the motivation of employees moderates between organizational learning and innovation?
- e) To what extent the organizational learning possess an indirect effect on organizational innovation (through significant mediation effect of learning adaptation) that is further moderated by the motivation to perform?

2. Literature Review & Hypotheses development

Innovation is one of the ways by which an organization responds to the faced competitive challenges (Gillani and Kiani, 2019). Learning processes enhance innovation by encouraging creativity, acquisition of new knowledge which leads to enhanced innovative behavior (Ozsungur, 2020). Organizational learning by acquiring transferring and retaining new knowledge among their employees forms the basis for the organizational innovation to bring newness in products and services so that organizations can survive in an extremely competitive market (Hogan and Coote, 2014). Generally, the organization engaged with learning activities promotes the newness of ideas, products, processes, structures and promotional strategies within the organization (Sheng and Chien, 2016; Park, 2020). Learning processes are also associated with the adaption of learning as learning acquires new knowledge, transfer of newly acquired knowledge to the other employees and retaining the transferred knowledge in organizational memory leads towards the adaption of learning by employees. This adapted learning further leads towards innovation to achieve overall effectiveness in the organization (Huber, 1991). Literature reflects the association of organizational learning on organizational innovation however there are merely any studies exploring the relationship of these variables with these dimensions of constructs in the telecom sector of Pakistan. Thus it reflects a gap to be bridged by empirical testing. Taking in the view of above hypothesis 1 is presented as under:

***H1:** Organizational learning impacts positively on organizational innovation.*

A review of the existing literature has revealed that the relationship of organizational learning and innovation has been examined by researchers and findings of such studies reflect a positive relationship of these variables (Liao *et al.*, 2012; Ugurlu and Kurt, 2016). However, the relationship is assumed to be

incomplete without exploring mediating and moderating variables which affect and influence the relationship significantly. Ugurlu and Kurt (2016) indicated that there is a need to explore the relationship in presence of other accounted variables. Costa and Monteiro (2016) also argued that there is a need to establish further understandings of the empirical relationships of innovation and innovation antecedents as refer by Gap-2 of this research work (Costa and Monteiro, 2016; Hashim et al. 2019). Researchers believe that learning leads towards learning adaption whereas learning adaption refers to the capability of an organization to adapt according to the changing dynamics of the organization this adaption of learning by organization leads it to the innovation of organization in their products, processes, structures and promotional strategies. Taking in view of the above, hypothesis 2 is presented as under:

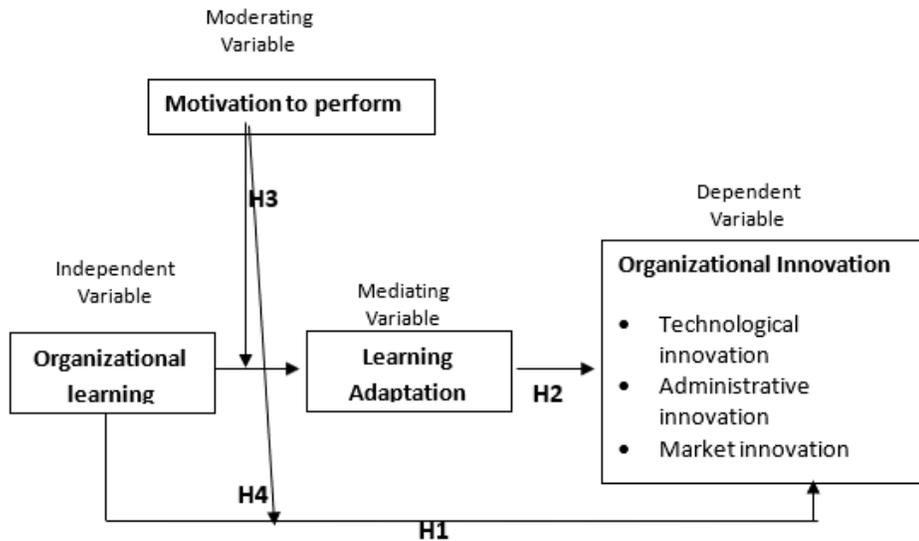
H2: Learning adaptation mediates between organizational learning and organizational innovation.

Humans are different from each other based on some demographic and personal factors and different humans possess different motivation levels. Generally, it is not wrong to state that each organization possesses employees with different work-related attitudes. Some employees may be very keen on their work or others may not be (Chiu et al., 2020). This may highlight the importance of context (Argote, 201; Zia-ur-Rehman et al., 2021). The context in which the organization or the individuals are operating shapes the motivation of the employees. Consequently, it may lead to an interruptive or boosting effect on the learning and innovation across the organization (Argote, 2011). It also further influences the performance levels of individuals or organizations. It is pertinent to mention here that the impact of motivation to work as a moderating variable between organizational learning, learning adaptation and organizational innovation is one of the newest proposals to emerge in organizational studies research. A negligible work has been found with empirical testing to check the moderation effect of motivation between organizational learning and innovation (Argote, 2013). Researches reflect that the motivation of employees and involvement of employees towards their jobs affects organizational innovation (Hamedi and Mehdiabadi, 2020; Naseem et al., 2019). Thus, there is a need to test the relationship between the motivation of employees to perform and organizational innovation empirically (Said et al., 2016; Naiwen et al., 2020). Keeping in view the gap identified by Argote (2011), Ugurlu and Kurt (2016), this research also attempts to fill these literature gaps by testing the moderating effect of motivation to perform between the organizational learning process and organizational innovation. Thus, the identification of gap and the literature support for the possible association of constructs, further probes the research hypothesis 3 and 4 of this research study as:

H3: The relationship of organizational learning processes and learning adaptation is positively moderated by Motivation to Perform.

H4: The relationship of organizational learning processes and organizational effectiveness is positively mediated by Motivation to perform whereas organizational innovation is held constant.

The formation of these four testable research hypotheses to address the mentioned gaps consequently paves the way towards the formation of the proposed theoretical framework. It illustrates that learning effects organizational innovation in two manners, (i) direct effect on organizational innovation and (ii) indirect effect on organizational innovation. The direct effect of organizational learning on innovation is the simplest path that may be tested through the already developed research hypothesis 1. However, the indirect effect of learning on innovation routes through the mediation effect of learning adaptation and



simultaneously along with the moderation effect of motivation to perform. This indirect effect (figure 1) needs to be tested. Hence, research hypothesis 5 has been developed to testify the proposed theoretical framework of this research work as follows:

H5: Organizational learning processes have a significant indirect effect (through learning adaptation) on organizational innovation that is positively moderated by a motivation to perform.

FIGURE 1. HYPOTHESIZED THEORETICAL FRAMEWORK OF STUDY

3. Method

Saunders's (2007) research design has been followed to conduct this study. Questionnaire survey strategy has been used to collect the data from a sample frame of population. The units of analysis for this study are middle managers and functional managers including franchisee heads and knowledge workers of telecom sectors. A simple random sampling technique is used by circulating 700 questionnaires were distributed and in response, 419 filled questionnaires were obtained.

In order to measure the construct organizational learning 26 items have been adopted from previous research (Skerlavaj *et al.*, 2010). Organizational innovations have been measured by the items developed by Popadiuk and Choo (2006). Learning adaptation is a uni-dimensional construct and 4 items scale of Hertog (2010) has been adopted. The motivation to perform has been measured by 3-items adapted from the work of Katou and Budhwar (2006).

4. Findings and Discussions

Out of 419 filled responses, 217 were male respondents representing 51.79 percent of the total population while the remaining 202 were female respondents (48.21 percent). The results also reflect that 27.41 percent of respondents were 20 to 30 years of age, 56.31 percent of respondents were 31 to 40 years of age and the residual 16.28 percent of respondents are above 40 years of age.

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This research work has adopted the original validated scales of previous researches for the measurement of research constructs. However, confirmatory factor analysis is essential for validation of the psychometric properties of original scales. It was found that the factor loadings of all items (from 0.74 - 0.89) measuring the constructs fall in an acceptable range. The model fit indices were also checked as mentioned in table 1.

Table-1. Confirmatory factor analysis of constructs

Construct	Sub. Constructs	Item #	Factor loadings	CFA Fit Indices	Mean	Cronbach alpha
Organizational learning	Knowledge acquisition	1	0.85	CMIN/df=1.72 P=.431 AGFI=0.94 TLI=0.969, NFI=0.972 CFI=0.952 RMSEA=0.061	4.51	.810
		2	0.87			
		3	0.93			
		4	0.83			
		5	0.79			
		6	0.93			
		7	0.96			
		8	0.91			
		9	0.82			
		10	0.77			
		11	0.89			
Organizational learning	Knowledge Transfer	12	0.87		4.48	.739
		13	0.94			
		14	0.97			
		15	0.82			
		16	0.88			
		17	0.83			
Organizational learning	Knowledge Retention	18	0.95		4.21	.936
		19	0.97			
		20	0.87			
		21	0.85			
Organizational learning	Cognitive and Behavioral change	22	0.98		4.37	.942
		23	0.93			
		24	0.88			
		25	0.95			
		26	0.81			
Organizational Innovation	Product Innovation Process	27	0.75	CMIN/df=1.57 P=.101 AGFI=0.97	4.17	.812
		28	0.89			
		29	0.89			

	Innovation	30	0.91	TLI=0.992		
	Structure	31	0.91	NFI=0.985	4.09	.819
	Innovation	32	0.90	CFI=0.994		
	Cultural	33	0.95	RMSEA=0.034		
	Innovation	34	0.94		4.13	.900
		35	0.98			
	Market	36	0.96			
	Innovation	37	0.94		4.57	.885
		38	0.98			
		39	0.74			
Learning adaptation		40	0.85		4.21	.793
		41	0.79			
		42	0.77			
Motivation to perform		43	0.96		4.00	.886

The results showed that all the values of fit indices also fall in the acceptable range. The reliability of all the sub-constructs was also found to be acceptable ranging from .739 - .974. This represents that all the research constructs show a good model fit overall. In total, the results of confirmatory factor analysis were found to be satisfactory. Discriminate validity of all research constructs was also checked through Pearson correlation analysis. The results of the inter-item correlation showed that there was a negligible relationship exists between the sub-constructs of all the research constructs as shown in table 2. Thus it satisfies the basic criteria of discriminate validity that sub-constructs are distinguishable from each other.

Table-2. Inter-item Correlation Analysis of all Research Construct

Construct	Dimensions	1	2	3	4	5
Organizational learning	(1)Knowledge acquisition	1				
	(2)Knowledge transfer	.104 .000	1			
	(3)Knowledge retention	.015 .000	.019 .000	1		
	(4)Cognitive and Behavioral change	.019 .000	.032 .002	.078 .002	1	
Organizational innovation	(1)Product Innovation	1				
	(2)Process Innovation	.094 .001	1			
	(3)Structural Innovation	.109 .000	.029 .000	1		

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(4)Cultural Innovation	.005	.072	.008		
	.000	.000	.000	1	
(5)Market Innovation	.115	.095	.002	.007	
	.000	.000	.000	.000	1

For hypotheses testing, regression analysis was run in which the dependent variable organizational innovation is regressed against the organizational learning as shown in table 3. The results reveal that 56.5 % of the variation in organizational innovation is described by organizational learning processes having a significant value of $.000 < 0.05$. This shows that there exists a significant positive effect on innovation through organizational learning. Thus, hypothesis-1 is accepted.

Table-3. Regression Analysis for Assessing the Total Effect of Learning on Innovation

Variable	Coeff.	SE	T	P
Constant	.518	.109		
Organizational learning	.833	.036	23.282	.000
$R^2=0.565, F(1,417)=542.06, p=0.000$				

The mediation effect of learning adaptation is checked through model 4 of the Andrew Hayes (2017) process approach. The results reveal that the 66.63 % of organizational innovation is described by both the independent (organizational learning) and mediating variable (learning adaptation) having a p-value of $.000 < .05$. It is also found that the relationship between the learning adaptation and organizational innovation is positively significant having p-value of $.000$ at, $t\text{-value}=11.2$ and coefficient value of $.1923$. Direct effect is also not significant with the p-value of $0.373 > 0.05$ and $t\text{-value}=1.662$. This represents that the full mediation effect of learning adaptation exists between organizational learning processes and organizational innovation. The total effect and indirect effect is significant with the effects of $.8334$ and $.2189$ respectively (table 4). Thus, hypothesis-two is also accepted.

Table-4. Mediation Effect of Learning Adaptation

Antecedent	Learning Adaptation				Innovation			
	Coef.	SE	T	P	Coef.	SE	T	P
		.274	.731					
Constant	.2006	2	6	.464	.556	.096	5.79	.000
Organizational learning			12.6					
Learning Adaptation	1.13	.089	8	.000	.6145	.037	16.6	.037
	~	~	~	~	.1923	.017	11.2	.000

$R^2=0.6663; F(2, 415)=415.2; p=0.000$

Total Effect=.8334,t=23.83,p=.000
 Direct Effect=.6145,t =1.662,p=0.374
 Indirect Effect=.2189

Model 1 of Andrew Hayes (2017) has been applied to test moderation effect. It was found that 43.33% of variance in learning adaptation is being discovered by both the independent and moderating variable having p-value of .000<.05. It is also discovered that their association is positively significant having p-value=.000 at, t-value=19. and coefficient value of .6352. Similarly, the relationship between the learning adaptation and motivation to perform is also significant with the p-value= .000, t-value= 8.09 and coefficient value of 2.19. The interaction effect of organizational learning and motivation also possesses a significant effect on the learning adaptation with the coefficient value of .6004, p-value=.000 and t-value of 6.78. The results also revealed that this interaction effect has caused the 6.29 percent increase in variance of learning adaptation with the positive moderation effect (table 5). Thus, hypothesis-three is also found to be accepted.

The results of moderation effect on innovation are also mentioned in table 5. It is revealed that 66.72 % of variation in organizational innovation is being explained by independent and moderating variable having p-value of .000<.05. It is identified that their association is positively significant having p-value of .000 at, t-value of 11.6 and a coefficient value of .1458. Similarly, the relationship between the innovation and motivation to perform is also found to be significant as p-value is .000, t-value is 5.46 and coefficient value of .5833. The interaction effect of organizational learning and motivation also possess a significant effect on the innovation with the coefficient value of .2468, p-value of .000 and t-value of 7.08. The results also revealed that this interaction effect has caused the 4.02 percent increase in variance of innovation with the positive moderation effect. Thus, the hypothesis-four is also found to be accepted.

Table-5. Moderation Effect of Motivation on learning adaptation and innovation

Antecedent	Learning Adaptation				Innovation			
	Coef.	SE	T	P	Coef.	SE	T	P
Constant	6.278	.939	6.68	.000	2.907	.370	7.85	.000
Organizational learning	.6352	.318	19.9	.046	.1458	.125	11.6	.000
Motivation	.219	.271	8.09	.000	.5833	.106	5.46	.000
Interaction - 1	.6004	.088	6.78	.000	~	~	~	~
Interaction - 2	~	~	~	~	.2468	.034	9	.000

$R^2=0.4333;F(3,415)=105.7;p=.000$ $R^2=0.6672;F(3,415)=277.3;p=.000$
 R square increase due to interaction=.0629;F(1,415)=46.1 ; p=.000 R square increase due to interaction=.0402;p=.000

For testing the hypothesis-five, the model 8 of Hayes (2017) regression based process approach is used. The results showed that the 82.09 percent of variance in innovation is explained by the combinational effect of independent, mediating and moderating variable with the significant p-value=.000<.05. The interaction effect of organizational learning and motivation has a positive significant effect on the learning adaptation with the coefficient value=.6004, p-value=.000<.05 and t-value=6.78>2. Similarly, it was also found that the interaction effect of organizational learning, motivation and learning adaptation has the positive significant on innovation with the coefficient value=.0861, p-value=.001<.05 and t-value=3.18>2 as shown in table 6. Hence, hypothesis-5 stands to be valid. These results represent that organizational learning possesses a significant indirect effect on innovation through the mediation effect of learning adaptation that is positively moderated by the motivation of employees to perform.

Table-6. Overall Model Testing - Mediation Moderation Analysis

Antecedent	Learning Adaptation				Innovation			
	Coef.	SE	T	P	Coef.	SE	T	P
Constant	6.278	.939	6.68	.000	.122			
Organizational learning	.6352	.318	19.9	.046	.2043	.092	2.62	.000
Motivation Learning adaptation	.2194	.271	8.09	.000	.4000	.084	4.68	.000
Interaction - 1	~	~	~	~	.2677	.014	4.29	.000
Interaction - 2	.6004	.088	6.78	.000	~	~	~	~
	~	~	~	~	.0861	.027	3.18	.001

R²=0.8209,
 F(4,414)=474.4
 p=0.000

5. Discussion and Conclusion

This study has found the proposed hypotheses as valid. These statistical results are consistent with the previous researches that explained the positive effects of organizational learning on the innovation level of the organization (Hurley, 2015; Sheng and Chien, 2016). Moreover, organizational learning and learning adaptation are the critical antecedent of innovation. The empirical analysis of this work has revealed that two individuals of the cellular companies who differ by one unit in learning may differ by .1923 units in achieving innovation as a result of the tendency that more learning practices may contribute to more learning adaptation among the individuals, consequently that brings the higher innovation in the organization. Another finding of this work claims that the estimated difference of .6145 units in innovation exists among the two individuals who carry the same degree of learning adaptation but differ by one unit in

practicing learning. The individuals who experience more learning practices yield more learning adaptation and consequently prove to achieve a higher extent of innovation with the increase of .1923 units. It can also be claimed based on the above results that the two individuals who differ by one unit in learning are found to be differed by .8334 units in achieving innovation. Another crucial aspect of this study states that the one-unit increase in motivation level of employees would produce .400 unit increase in achieving innovation. In addition to this, this one-unit increase in motivation would also produce the .0861-unit additional increase in achieving innovation by interacting with learning. The value of study is evident by the fact that this work has bridged some crucial gaps in literature.

As conceived from the findings of this study if an organization wants to innovate it has to enhance its learning processes. For enhancement of the learning process organizations have to develop a mechanism for acquiring knowledge through workshops, seminars, mergers, reports, newsletters, magazine and other sources and then this acquired knowledge must be transferred to other employees so that it can become part of organizational memory which will enhance the cognitive and behavioral changes in their employees (Chua *et al.*, 2020). Moreover, the importance of other factors such as motivation of employees to perform must not be neglected while enhancing the learning process as this study revealed a high influence of this factor in enhancing innovation through enhancement of learning processes.

This research works offers some new paths for future researches. This research study has exclusively considered the conditional effect of motivation only, however, the other aspects of employee's work attitude, commitment, job involvement, etc. have not been taken in view. Future researches are suggested to explore the effects of these undercover variables on the extent of innovation.

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