

# Uncertain Environment and Organizational Performance: The Mediating Role of Organizational Innovation

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Received: June 21, 2016

Accepted: July 6, 2016

Online Published: August 26, 2016

doi:10.5539/ass.v12n9p124

URL: <http://dx.doi.org/10.5539/ass.v12n9p124>

## Abstract

**Purpose:** How to survive in dynamic and uncertain business environment?, is one of the biggest challenge for corporations today. To answer this question, current study examines the role of organizational innovation for improving performance in today's competitive, dynamic and uncertain business environment.

**Design:** The study used structured closed-ended survey questionnaire and data is collected through self-administered technique to increase the response rate. The unit of analysis is the employees working in cellular industry in Pakistan. The analysis techniques includes, validity analysis through confirmatory factor analysis (CFA) reliability analysis through Cronbach alpha, correlation analysis, hypotheses testing utilizing structure equation modeling (SEM) in AMOS software whereas, mediation through method of Baron and Kenny (1986).

**Findings:** Results show that organizational innovation plays the mediating role between uncertain environment and organizational performance.

**Practical implications:** The study proposes that organizational innovation is inevitable for maintaining organizational performance in uncertain business environment particularly in dynamic industries.

**Originality:** The current study proposed and tested an important conceptual model that explains the mediating role of organizational innovation to enhance the organizational performance in uncertain business environment.

**Keywords:** uncertain environment, organizational innovation, organizational performance, cellular sector

## 1. Introduction

The advent of globalization has posed serious challenges in form of hyper competition on multinational as well as domestic organizations. This intensity of competition, fast changing customer preferences, heavy competitors' moves are continuously influencing the external environment and creating high uncertainty in it. In the past, game was easy because organization did not have to face the extreme level of volatility of external environment but only in form of socioeconomic variation. Now the uncertainty in organizational environment is not only the result of local market variations but international markets fluctuations are also enforcing organizations to continuously stay vigilant.

According to Drucker (1999) increasing fluctuations in business practices and technological applications are creating challenges for management and intimidating the survival of organization. The need to survive and grow in the current competitive age of business world is enforcing organizations to find such capabilities that enable them to achieve their goal of improved performance. Organizations can step up towards the achievement of such capabilities by continuously scrutinizing the changes in its external environment and focusing on the enhancement of innovative ability. Ancona, Okhuysen & Perlow (2001) state that in uncertain environment survival and sustainability of organizations lies in innovation. This innovation capacity ultimately moves the organization towards the goal of sustainable competitive advantage and becomes a milestone in attaining the target of higher performance in such a volatile environment. According to Calantone, Cavusgil & Zhao (2002) &

Zaltman, Duncan & Holbek (1973), organization possessing better innovative capacity will be more responsive to external environment and thus be efficient in obtaining a sustainable competitive advantage.

Cellular is most rapidly progressing sector of the world that's why it has to survive in a hyper competition and as a result it provides the opportunity for extensive research to explore the contribution of innovation as factor contributing in uplifting the organizational performance in an uncertain environment. Also if we look on the other side, researchers' focus in this sector is on technology diffusion, pricing practices, customer satisfaction, retention & acquisition and market behavior etc. Such as study by Nunn & Sarvary (2004) explore the pricing practices in cellular sector and found that only deregulation is not sufficient for controlling the price factor. Another study on cellular sector looks at the technology diffusion impact on competitiveness of sector and found it positive (Jha & Majumdar, 1999). Similarly, Paulrajan & Rajkumar, (2011) uncover that price is main determinant for customer preference of any cellular service along with quality and availability of product. So, need to explore the interplay of uncertain environment, organizational innovation and performance in cellular sector highlights the signification of this study in the international context.

Skinner (1969); Hayes & Wheelwright (1984) established a link between strategy and organizational performance. Jamison (1981a); White & Hamermesh (1981) proposed the link between strategy and performance and established that uncertain environment determines strategy and strategy sequentially becomes determinant of organizational performance. The same sequential link is already empirically verified by Swamidass & Newell (1987); Vickery et al. (1993); Ward et al. (1995); Badria et al. (2000). But these empirical evidences are from manufacturing companies of different countries and strategies utilized to know the sequential impact of uncertain environment on performance are manufacturing and operational such as cost, quality, flexibility and delivery. Current study is using these proposed models as base to conduct a study in service industry by taking organizational innovation as a strategy between uncertain environment and organizational performance.

Other highlights of current research are that it adds to the literature in different ways. Firstly, this study is important when viewed in relation to today's highly competitive environment where pressures for organizations to meet customized demands is a challenging task and where several forces are needed to work in collaboration to achieve a goal of improved performance. Secondly, this study targets to find out the contribution of organizational innovation as a strategy to achieve the ultimate target of higher organizational performance. Overall, this study looks at the contribution of uncertain environment in enhancing the organizational performance by taking organizational innovation as mediators. It facilitates the organizational management by identifying the factors contributing in uncertainty of environment, organizational innovation and performance in the context of Pakistan. The study presents unfathomable insight by guiding the organizations about the importance of innovation in uplifting the performance.

## **2. Literature Review**

### *2.1 Uncertain Environment*

Larger view of environment depicts that it is unlimited and comprises of every element outside the organization. However, if we look specifically the most important one is that which actually effects the organization and its survival. So, we can say that organizational environment includes any element outside organizational boundary which has strong impact on the organization. To understand the environment of organization, analysis of its domain is very helpful. Domain is a field of environment which is selected by an organization to react or respond upon. It is actually an area which is served by an organization in form of products/services. Domain actually identifies niches and external segments within which an organization performs to achieve its targets. The understanding of organizational domain is very important for organizational success e.g. Baren and Noble severely affected when it remained unable to understand a vital element in form of technological advancement of its domain and this thing provided advantage to its competitors to grow and occupy its market share (Daft, 2012).

Organizational environment consists of various segments or subparts that are surrounded by related components. As a whole, external environment consists of ten sectors i.e. i) industry ii) human resource iii) raw material iv) market v) financial resources vi) technology vii) economic conditions viii) government ix) socio-cultural x) international (Daft, 2012). Figure 1 of international context shows all elements of organizational environment.

The interplay of factors shown in Figure 1 creates volatility/uncertainty in the business environment. Organizations have to face vague situations as a result of the variety of patterns and events happening across environmental sectors, which create even larger amount of uncertainty in the environment and are latent threats to the survival of an organization. Uncertainty is unexpected changes in the factors of external environment. Dess & Beard, (1984) describes uncertainty of the environment as a rate of change and unpredictability of

changes in the organizational external environmental factors. Uncertainty is produced as a result of volatility in the external environment of the organization which creates deficiency in the information required for understanding of cause and effect patterns (Carpenter & Fredrickson, 2001; Keats & Hitt, 1988). Baum & Wally, (2003) recommends that dynamic environment consists of the amount or level of uncertainty originating from external environmental factors.

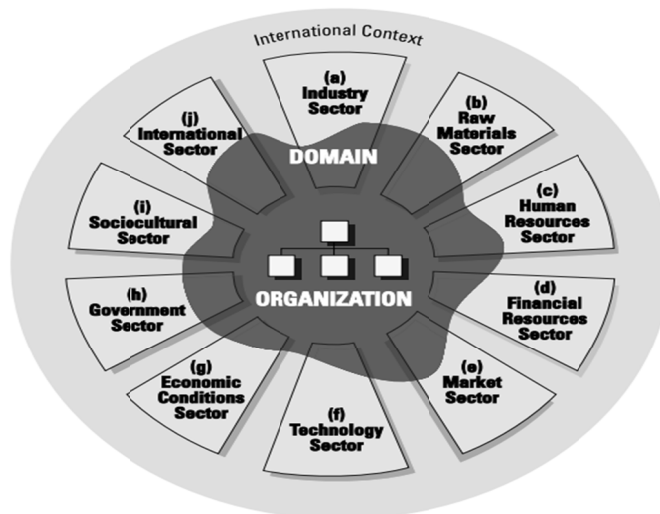


Figure 1. Organizational environment

Source: Organization Theory and Design, Eleventh Edition by Richard L. Daft

## 2.2 Organizational Innovation

Schumpeter, (1928) for the very first time explored the concept of innovation in his research on the instability of capitalism and pointed out, that the innovation is a source of capitalism development. Afterwards, researchers such as Abernathy & Clarke, (1985); Damanpour, (1991) investigated the notion of innovation in the perspective of economic units and proposed that innovation directly and positively influence the performance. Thompson, (1965) and Greve, (2007) highlighted another aspect of innovation that it enables the organization to achieve resources required to adapt to volatile environment. Mintzberg, (1979); Kimberly & Evanisko, (1981) point out that organizational design explores the association between organizational structure and its tendency to innovate. This strand takes the organization as a unit of analysis and major objective of the researcher here is to find and explore the organizational structural features that affect the innovative capacity of organization. Research of Hannan & Freeman, (1984) concentrates on the organizational transformation, adaptation and importance of developing new types of organization to uplift the innovation capacity of organization..

Different authors defined innovation differently based upon concept and importance. Such as innovation is “an idea, a product, or process, system or device that is perceived to be new to an individual, a group of people or firms, an industrial sector or a society as a whole” (Rogers, 1995). Organizational innovation can be in form of new product/service, latest technology of production, latest procedure for operation or latest managerial strategy to run the business. (Zaltman, Duncan, & Holbeck, 1973; Nonaka & Yamanouchi, 1989; Tushman & Nadler, 1986; Liao, Fei, & Liu, 2008). Jacobs & Snijders, (2008) state that innovation creates something new with value addition. Albury, (2005) is of the view that prerequisites for an innovation to be successful are creation of new processes, up-dation of products and services and efficient delivery methods.

## 2.3 Organizational Performance

In the management science literature performance indicator has been used widely by researchers to assess the progress and worth of organization. This indicator allows managers and researchers to evaluate the competitiveness of organizational strategies and measure its progress with its competitors. Comprehensively, organizational performance is very useful to overall evaluate the organization, its actions and environment. Its significance is highlighted through its extensive use as a dependent variable, such as performance has been studied in 439 research papers of imminent journals in just three years of period and the point of concern is that in 23% articles it included as dependent variable (March & Sutton, 1997).

Although various researchers used measure of organizational performance in their studies but little attention is paid to its universally accepted definition. No common definition of organizational performance found from literature as it has been interpreted differently over the different period of time. Georgopoulos & Tannenbaum, (1957) defined organizational performance as the extent to which organization is considered a social system created to accomplish its objectives. During this period of 50's organizational work, structure and people were used as performance indicators. However, later on, during 60's and 70's, researchers and managers started exploring new methods for evaluating of organizational performance and then by Seashore & Yuchtman, (1967) it is described as an organizational ability to explore its environment in order to access and utilize the limited resources. Till the years of 80's and 90's effectiveness and efficiency had been become prominent goals for a successful organization. So, Lusthaus & Adrien, (1998) identified that a successful organization is one that achieve its goal of performance by achieving maximum by minimum resources. This scenario included profit as one important indicator of organizational performance.

#### *2.4 Uncertain Environment and Organizational Innovation*

Organization has to survive in the dynamic environment and the dynamism depends upon uncertainty. When this uncertainty is high organization has to become more responsive as compare to when uncertainty is low. Ozsomer et al., (1997) state that as uncertainty increases organization need to become more proactive and aggressive in order to be innovative. Early researches also pointed out that more than 50% new products and innovation emerged as a result of market competition or other environmental factors (Miller and Friesen, 1982; Myers & Marquis, 1969). In essence, greater the variability in the environment, larger the innovation in form of new products and processes by organizations to save their market share. Fluctuations in the customers' tastes and preferences compelled organization to introduce new and innovative products in the market, the level of innovation in such environment depends upon competition in the market that is one component of environmental uncertainty.

Various researchers have established that uncertain environment fosters the innovation (DePietro, Wiarda, Fleischer, 1990; Tornatzky & Fleischer, 1990). Many researchers also link environmental uncertainty and organizational innovations (form strategy and culture) in positive (Damanpour, 1996; Huber & Glick, 1993; Ward, Bickford, & Leong, 1996). Organizations with less uncertain environment are neither innovative nor progressive and alternatively high innovation would always result of more uncertain environment. According to Ettlie, (1983) Organizations facing higher uncertain environment focused on developing more vibrant technology policy.

Ultimately, we can say that only emphasis level can be difference but the end story is almost always the same: "that organizations residing in relatively uncertain environments may be expected to adopt a greater number of innovations than those residing in relatively certain environments" (Russell & Russell, 1992). There is a relative consensus favoring a positive link between uncertain environment and the propensity to innovate which generates the below hypothesis:

*Hypothesis 1: Uncertain environment positively influences the organizational innovation.*

#### *2.5 Organizational Innovation and Organizational Performance*

Hisrich, (2004); Bubou et al., (2012) state that creativity is something needed for innovation. Innovation capable the organization to achieve competitive advantage and improve performance by focusing on production efficiency, customer satisfaction, market share. Hurley & Hult, (1998) are of the view that organizational ability to innovate is one of the highly contributing factors towards performance. According to Zaltman et al., (1973); Calantone et al., (2002) organizations with high innovative ability will be able to acquire capabilities require to enhance the performance and achieve competitive advantage. In tough corporate competition customers' needs and preferences are continuously changing and this situation is further enhancing the significance of innovation. Wang & Ahmed, (2004) point out that to survive in uncertain environment an organization needs to focus on innovation. According to Hisrich, Peters, & Shepherd, (2008) innovation is fundamental for the progress of any organization.

Organization must create innovative production process because resulted latest and quality products increase the performance of firm. Similarly, another study also recommends that innovation can improve organizational performance by providing competitive edge (Darroch, 2005). This study also states that organizations which are sluggish in their innovative activities leave behind other organizations. Kocoglu, Zeki & Ince, (2011) also find that innovation has encouraging impact on financial as well as non financial performance of the organization. So, on the above literature review following hypothesis can be proposed:

*Hypothesis 2:* Organizational innovation positively influences the organizational performance

## 2.6 The Mediating Role of Organizational Innovation in the Relationship between Uncertain Environment and Organizational Performance

Innovation is a vibrant potential that enables an organization to learn and adopt pattern of collective activity from uncertain environment and in turn travel towards the generation and modification of its operating routines in haunt of effectiveness and efficiency. Ancona et al., (2001) state that in uncertain environment survival and sustainable development of organizations lie in continuous learning and innovation. Uncertainty in external environment forces the organization to be innovative in order to survive in ever-changing market (Meyer & Goes, 1988 and Nohria & Gulati, 1996). Uncertain business environment is the factor which actually forces organizations to become proactive and focus on learning and innovation for better performance. Uncertainty in the industry in form of technological development, unpredictable competitors' moves heavily effect the management decisions regarding type and amount of required resources, abilities to improve performance and create competitive advantage. This uncertainty also affects the speed of organizational learning and innovation capability of the organization. Generally uncertainty in external environment and specifically technological and demand uncertainty are factors critically inducing management to focus on learning and innovation (Brown et al., 1997; Teece, Pisano & Shuen, 1997) in order to improve performance.

According to Henderson, (1993) organizational performance is suffered by insufficient and late reaction to fluctuations in environment. Zahra, (1996) proposes that in uncertain environment opportunities are higher than in stable environment. These opportunities enable the organization to increase innovation and resultant performance. Innovative firms utilize opportunities from uncertain environment by developing new products and services and thus catering the market segments and new niches (Lumpkin & Dess, 2001 and Zahra, 1996). Although researchers study the relationship between uncertain environment and innovation and its necessity on survival and sustainability but gap still exists to further investigate and check mediation role of innovation between uncertain environment and performance so, we can hypothesis that:

*Hypothesis 3:* Organizational innovation mediates the relationship between uncertain environment and organizational performance

## 2.7 Hypothesized Research Model

Figure 1 represents proposed model of the thesis which is based upon the literature review of relationship between uncertain environment, organizational learning, innovation and organizational performance. Skinner (1969); Hayes & Wheelwright (1984) established a link between strategy and organizational performance. Jamison (1981<sup>a</sup>); White & Hamermesh ((1981) proposed the link between strategy and performance and established that uncertain environment determines strategy and strategy sequentially becomes determinant of organizational performance. The same sequential link is already empirically verified by Swamidass & Newell (1987); Vickery et al. (1993); Ward et al. (1995); Badria et al. (2000). But these empirical evidences are from manufacturing companies of different countries and strategies utilized to know the sequential impact of uncertain environment on performance are manufacturing and operational such as cost, quality, flexibility and delivery. Current study is extension of these proposed models in service industry by taking organizational innovation as a strategy between uncertain environment and organizational performance. The proposed model in Figure 2 elaborates the research hypotheses in form of arrows.

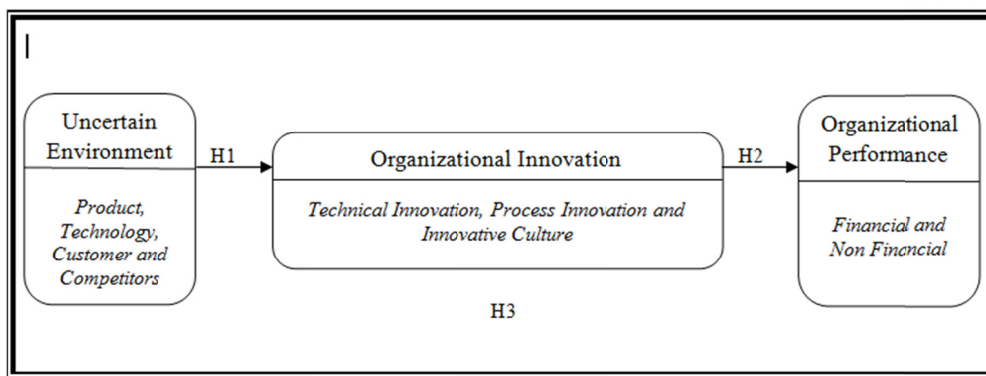


Figure 2. Hypothesized research model

### 3. Methodology

#### 3.1 Research Design

Current study is utilizing quantitative method by developing hypotheses based on the existing literature. Quantitative approach explores the phenomena on the basis of scientific methods. This type of approach supports hypothesized relationships between variables of deductive model. According to Aaker, Kumar & Day, (2001) such relationships in form of hypothesis are evident and their results can be quantified and proved by utilizing the statistical analysis. As defined above, current study is going to test relationship between/among proposed variables through the structure equation model (SEM) in AMOS software. This study will provide specific answers of questions as a result of data analysis. Pakistani Cellular sector consists of five organizations that are Mobilink, Telenor, Zong, Ufone and Warid. Corporate employees of cellular sector are the target population of this study.

For data collection researcher adopted method of self administrated survey for data collection. Data from all three cities were collected through personal visits of cellular companies' offices. Total population of this study is consisted of almost 15000 people from cellular sector and according to Sekran & Bougies, (2013) a sample size of 375 is enough for the target population of 15000. Total of 500 questionnaires were distributed for data collection. Out of which 387 received back filled after various telephonic calls and other follow-ups. So, response rate is 77.40%. During entry of data 359 were found correct and complete in all respect which means actual response rate is 71.80%. According to Tabachnick & Fidell, (1996) sample of minimum 200 is ok and 300 is good for the utilization of Structural Equation Model (SEM) as statistical tool.

#### 3.2 Instrument and Measures

The finalization of research design paves the way towards the selection of suitable survey instrument. Survey instrument must be appropriate to collect accurate data. According to Kumar, (1996) questionnaire is most suitable instrument for collecting the data from geographically wide spread respondents. This study is utilizing questionnaire as a data collection instrument. It is consisted of four parts that are uncertain environment, organizational Innovation, Organizational Performance and demographics. Details of these parts are as under:

##### 3.2.1 Uncertain Environment

Current study is focusing on the most instant factors affecting the environment such as customers' demand, new entrants and competitors; these are the aspects affecting the organizational performance at large (Achrol and Stern, 1988). In order to measure this variable a scale by Achrol & Stern, (1988) is being utilized in current research. It is a 5 point likert scale where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

##### 3.2.2 Organizational Innovation

In current study, organization innovation is based upon innovativeness, innovation and innovative culture. Innovativeness is being measured by Daft, (1982) & Tsai, (1997) innovations items by Liao et al., (2008), Wang & Ahmed, (2004) innovative culture by Hurley & Hult, (1998) 5 point likert scales where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

##### 3.2.3 Organizational Performance

Firm Performance is an indicator of its sustainability and success. This research is focusing on two sub dimensions of performance i.e. financial and non financial. Financial and non financial performance of organization is being measured through Emden, Yaprak, Cavusgil, (2005) and DLOQ 5 point likert scales developed by Watkins & Marsick, (2003), where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

#### 3.3 Data Analysis Techniques

The data gathered through questionnaire have been analyzed in next section however; this part explains the statistical analysis being used. For analysis of data SPSS and AMOS have been used. Frequency analysis part of descriptive statistics has been carried out to check the composition of data and comparison of means part to compare the means. Data normality is confirmed through skewness and Kurtosis values of each variable. Validity and reliability of data is checked through confirmatory factor Analysis (CFA) and cronbach's alpha respectively. To test the proposed hypotheses structure equation modeling (SEM) is utilized whereas, mediation is checked through method of Baron and Kenny (1986).

## 4. Data Analysis and Results

### 4.1 Validity and Reliability Analysis

Confirmatory Factor Analysis is conducted to check the validity of all scales being utilized in this study. Many researchers such as Tremblay & Pare, (2007); Sila & Ebrahimpour, (2005); Zhang, & Agarwal (2009) used CFA to check the validity of data collection instrument. Items with value  $<0.5$  in factor loading and/or items having negative/low correlations are eliminated from the path diagram for validity purpose. There were total of four major constructs consisting of forty eight items, as a result of iterative runs of CFA thirty one were emerged as final factors for all four constructs. Skerlavaj, Song & Lee, (2010) utilized the same questionnaire of organizational learning and innovation for their study on South Korean firms and they excluded total of 38 items for validity purpose. Finally achieved CFA model of current research is shown in the Figure 2 below:

After the elimination of eight non confirmatory items the instrument proved validate on the basis of CFA model being shown in the Figure 2 Chi square (CMIN), Degree of Freedom (DF), CMIN/DF, Goodness of Fit Index (GFI), Comparative Fit Index (CFI), Normed Fit Index (NFI), Root Mean Square Error of Approximation (RMSEA) are constructs use to check the fitness of model. Table 1 shows the values of fitness ratios:

Table 1. Fitness Ratio of Confirmatory Analysis (CFA)

CFA Model	CMIN	DF	CMIN/DF	GFI	CFI	NFI	RMSEA
	527.882	167	3.161	0.908	0.903	0.901	0.077

Table 1 shows the statistics values for model fitness. As for as CMIN is concerned the smaller the value of chi-square, the better the model fit however according to Kline, (1998); value of CMIN/DF should be between 1-5 for model fit and the value of default CFA model in this case is 3.161 which shows good fit. According to Byrne, (1994) for a good model fit values of GFI, CFI and NFI must be  $\geq 0.90$  and researchers' model achieved GFI, CFI and NFI values 0.908, 0.903 and 0.901 respectively which are up to mark. Hu & Bentler, (1999) argue that RMSEA value should be ideally  $<0.08$ , in the current case model obtains RMSEA value of 0.077 which is less than 0.08 and hence shows good model fit for validity purpose.

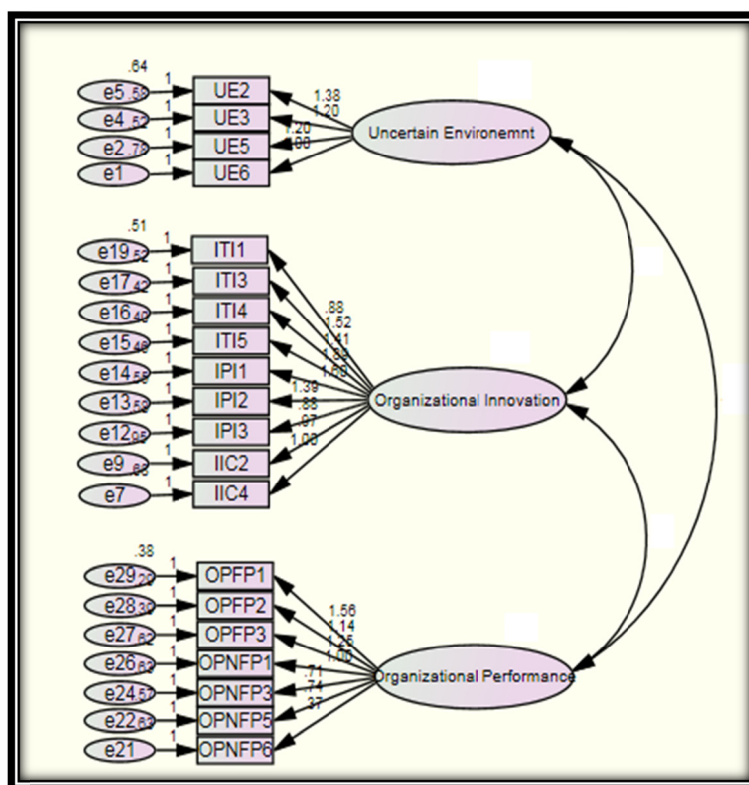


Figure 3. Confirmatory Factor Analyses

#### 4.1.1 Reliability Analysis

Reliability of questionnaire is checked through SPSS 20 software by using reliability analysis option. Values of Cronbach's alpha in the table 3 confirm the reliability of the instrument. Last column shows the values of Cronbach's Alpha for uncertain environment, organizational innovation and organizational performance. These values interpret that all variables are reliable to use for measuring instrument because the value of Cronbach's alpha above 0.5 is to be assumed satisfactory for reliability of the data in social sciences (Bernstein & Nunally, 1978; Ven & Ferry, 1980).

Table 2. Cronbach's Alpha Values

Variable	Cronbach's Alpha
Uncertain Environment	0.647
Organizational Innovation	0.727
Organizational Performance	0.650

#### 4.2 Mean, Standard Deviation and Correlation among Variables

Table 2 displays standard deviation, Mean of all variables and correlation of/between all variables. By analyzing the table it comes to know that uncertain environment has the highest mean followed by organizational innovation and then comes organizational performance. Analysis of correlation values shows that all variables have positive association with each other as per the purpose of the research. Highest correlation is between organizational innovation and organizational performance and lowest correlation is between uncertain environment and organizational performance remaining correlation values of studied variables fall in between both.

Table 3. Mean, Standard Deviation and Correlation Matrix

Sr. No.	Variable	S.D.	Mean	1	2
1	Uncertain Environment	0.570	3.724		
2	Organizational Innovation	0.461	3.667	0.528**	
3	Organizational Performance	0.419	3.681	0.443**	0.703**

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

#### 4.3 Hypotheses Testing

Researcher performed path analysis through structure equation modeling (SEM) by using AMOS 18 in order to test the hypotheses of the research and Baron and Kenny (1986) to check the mediation of innovation in the relation of uncertain environment and performance. Many researchers such as Sampe, (2012); Gemmell, (2011) used SEM to check the hypotheses relating to innovation and learning in different contexts and found it consistent for this purpose.

##### 4.3.1 Structure Equation Model (SEM)

Structure equation model (SEM) is constructed to verify the proposed hypotheses and to test the fitness of the developed model. The model emerged has been shown in the following Figure 4.

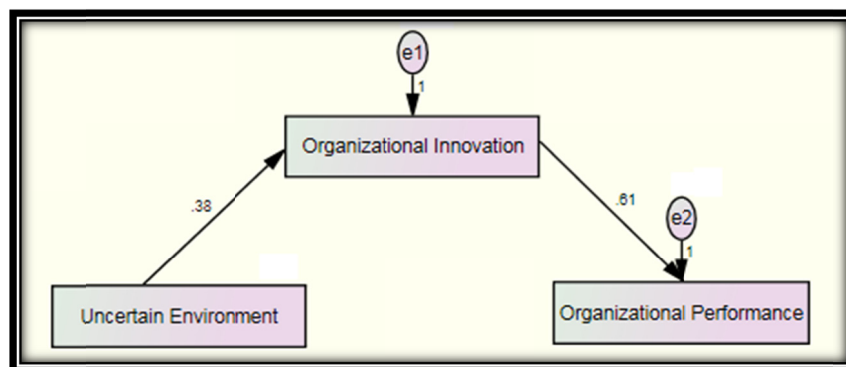
Table 4. Fitness Ratios of Structure Equation Model (SEM)

SEM	CMIN	DF	CMIN/DF	GFI	CFI	NFI	RMSEA
Model	3.233	1	3.233	0.992	0.984	0.979	0.075

Table 4 demonstrates statistical results of structure equation model for proposed hypotheses. Value of CMIN/DF is less than 5 as proposed by Alwin, Summers, Wheaton & Muthen (1977). Also Marsh and Hocevar, (1985) suggested the limit of CMIN/DF within 2 to 5 so, achieved value of 3.233 demonstrates model fit in case of this statistics. GFI, CFI and NFI are near to 1 or >0.90 which also interpret very good model fit. Hu & Bentler, (1999) argue that RMSEA value should be ideally <0.08, in the current case model obtains RMSEA value of 0.075



which is less than 0.08 and verifies the proposed model.



\*\*\*Significant at 0.001 level

Figure 4. Structure Equation Model (SEM)

#### 4.3.1.1 Hypothesis 1

The statistical values shown in table 4 prove hypothesis 1 where beta  $\beta$  is 0.380 at the P-Value of 0.000 means that uncertain environment causes 38% change positively in the innovation capacity of cellular organization as per their employees' perception.

Results of table 4 verify the hypothesis 1 as explained in the previous paragraph. The same i.e. uncertain environment positively influences the organizational innovation is also endorsed by the studies undertaken by (DePietro, Wiarda, & Fleischer, 1990; Tornatzky & Fleischer, 1990). Many other researches like this study also linked environmental uncertainty and organizational innovations (form, strategy, and culture) in positive way (Damanpour, 1996; Huber, Sutcliffe, Miller, & Glick, 1993; Ward, Bickford, & Leong, 1996). The researches carried on by Pisano, Shuen & Teece, (1997); Brown et al., (1997) also confirm the same thing in a way that overall the uncertainty in the environment and particularly uncertainty in technology and customers' demand enhance the innovation's significance.

#### 4.3.1.2 Hypothesis 2

Organizational innovation positively influences the organizational performance is the 2<sup>nd</sup> hypothesis of current study which is also proved through SEM analysis. Table 4 also depicts obtained values for hypothesis 2 where beta is 0.610 at the P-Values of 0.000 which states that organizational innovation positively influences organizational performance @ 61%.

As written above results of the study suggest positive association between innovation and performance i.e. innovation contributes positively and strongly to perk up performance of the organization as already agreed by many researchers such as Ussahawanitchakit, (2008); Calantone et al., (2002). Similarly, Klomp & Leeuwen, (2001) state in their findings that innovation enhances the sales performance, sales performance has been included as part of non financial performance in the current study. Another, preposition is that innovation not only enables management to enhance performance but also provides edge of achieving competitive advantage (Darroch, 2005) which also confirms the findings of this research. Kocoglu, Zeki & Ince (2011) also find that innovation enhance financial as well as non financial performance of organization. So, there is consensus among researchers that innovation plays significant role in enhancing the performance and this study also corroborates this point of view in Pakistani context.

#### 4.3.1.3 Mediation Analysis

Baron and Kenny in 1986 developed a method to test the mediation. This method of mediation analysis is utilized by various studies over the period of time. According to Krause, Serlin, Ward, Schulte, Rony, Ezenwa, Naab, (2010) since the publication, the paper of Baron and Kenny has been approached and cited by various researchers and its importance can be predicted by its citation index which has reached to 12,759 citations in the Science Citation Index, 17,428 citations in Google Scholar, and 9,718 citations in Psyc. INFO. Such a significant use of Baron & Kenny, (1986) method of mediation highlights its importance and develop the basis for use in the current study to test mediation in hypotheses six and seven.

To test for mediation effects thorough Baron & Kenny, (1986) method, first condition is to check the presence of

correlation between variables and then four statistical criteria must be met through linear regression tests; at step 1 path c must account for the relationship between the independent variable (X) and the dependent variable (Y); at step 2 path 'a' must account for the relationship between the independent variable and the mediator (M); at step 3 path 'b' must account for the relationship between the mediator and the dependent variable when controlling for the effect of the independent variable (indicated by c'); at step 4 path c' must be reduced from path c to indicate partial mediation. Full mediation exists when c' is reduced to zero. Partial mediation demonstrates that the mediator is important, though it may not entirely explain the dependent variable.

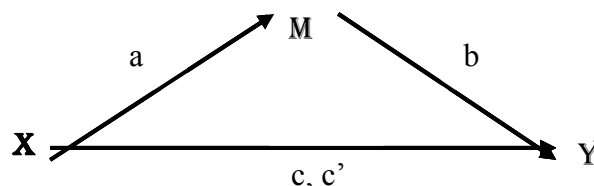


Figure 5. Baron & Kenny's (1986) Mediation Model

Following are the 4 steps for measuring mediation:

- The independent variable must hold a significant relationship with the mediator (Path a).
- There must be significant relationship between dependent and mediator (Path b).
- Independent variable must significantly predict dependent variable (Path c).
- Finally introduce the mediator in presence of independent and dependent variable into equation and if the relation between independent and dependent variable becomes insignificant then it will be called full mediation and if there is reduction in the relationship of it will be termed as partial mediation (Path c') (Baron & Kenny, 1986).

#### 4.3.1.3 Hypothesis 3

To apply the mediation analysis of Baron and Kenny (1986), first condition is to check the correlation between variables, table 3 shows that correlations between variables of hypothesis 3 are positive and are significant at 0.01 level. Now the next thing to test mediation is to build regression equations for hypothesis 3 i.e. organizational innovation mediates the relationship between uncertain environment and organizational Performance:

$$OP = \beta_0 + \beta_1 (UE) + \varepsilon \dots \dots \dots a$$

$$OI = \beta_0 + \beta_1 (UE) + \varepsilon \dots \dots \dots b$$

$$OP = \beta_0 + \beta_1 (OI) + \varepsilon \dots \dots \dots c$$

$$OP = \beta_0 + \beta_1 (UE) + \beta_2 (OI) + \varepsilon \dots c'$$

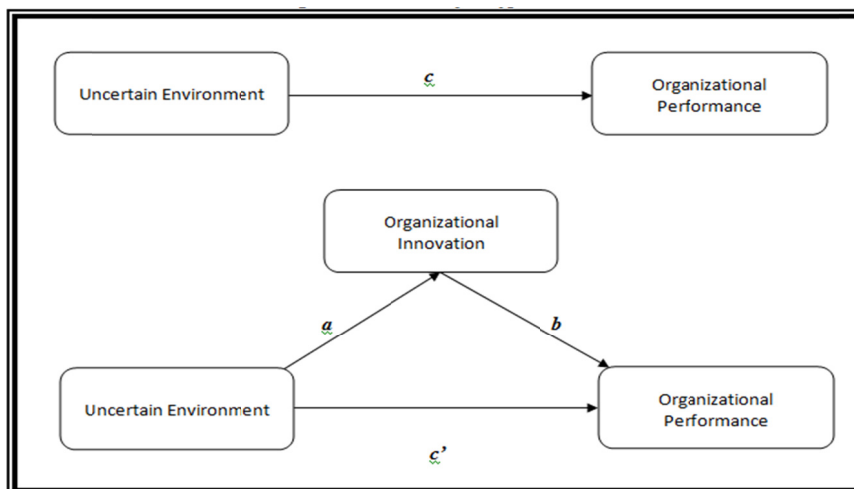
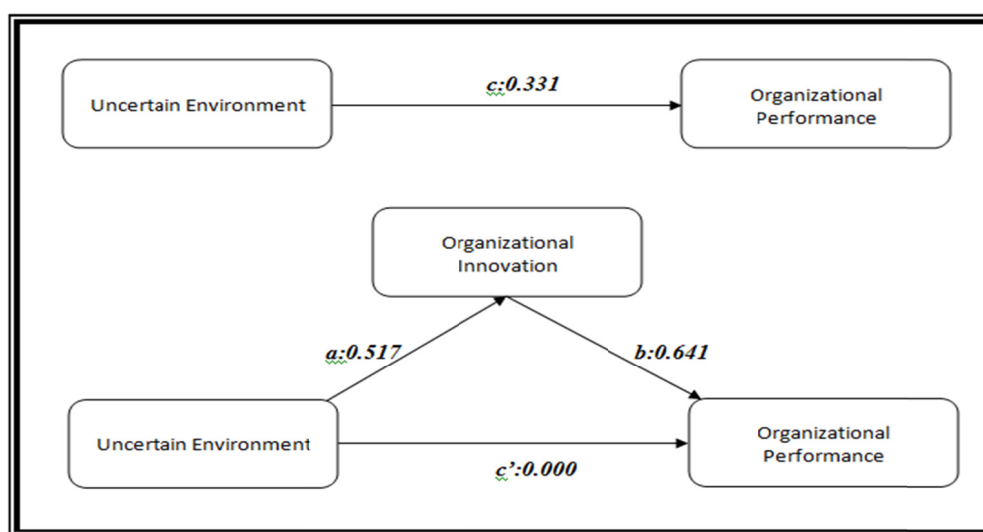


Figure 6. Diagram of hypothesis 3

Figure 6 shows pictorial description of the all the four concerning paths in mediation analysis of uncertain environment, organizational innovation and organizational performance.

Table 5. Results of Hypothesis 3

Equation/Path	T-Test	P-Value	Beta $\beta$
a (UE to OP)	6.636	0.000	0.331
b (UE to OI)	11.414	0.000	0.517
c (OI to OP)	15.793	0.000	0.641
c' (UE to OI to OP)	-0.007	0.995	0.000



\*\*\*Significant at 0.001 level

Figure 7. Diagram of hypothesis 3(for path a, b, c')

Table 5 shows the results of regression analysis for equation a, b, c and c' which was carried out to verify the mediation effect of organizational innovation between uncertain environment and organizational performance. Results of regression equations a b c of mediation analysis highlight that paths are significant for relationship between uncertain environment and organizational innovation, organizational innovation and performance, uncertain environment and organizational performance, which met the first three conditions of testing the mediation of any variable between predictor and dependent variables as suggested by Baron and Kenny, (1986). Results of equation c' of mediation analysis demonstrate the T-Test value is -0.007 at P-value of 0.995 for association between uncertain environment and organizational performance which became insignificant because P-value  $0.995 > 0.05$ . Results show that organizational innovation as a mediator intervene the path between uncertain environment and organizational performance up to the extent that it becomes insignificant and correlation fall negative to 0.00 as shown in Beta ( $\beta$ ) column against equation c'.

Hypothesis three for mediation of innovation has been verified in last paragraph based upon results shown in table 5. It is already proved by researchers such as Meyer & Goes, (1988); Nohria & Gulati, (1996) find innovation a compulsory link to survive in the uncertain environment and Ancona et al., (2001) describe innovation vital for survival in uncertain environment. McAdam & Keogh, (2004) prove it in a way that in order to achieve competitive edge an organization must have to be responsive to uncertain environment and become innovative. Zahra, (1996) study's results verifies the proposed hypothesis by finding that in uncertain environment opportunities are higher than in stable environment and these opportunities enable the organization to increase innovation and resultant performance. Findings of current study are also in line with Henderson, (1993) results that organizational performance is negatively influenced by insufficient and late reactions to fluctuations in environment.

## 5. Conclusion

Current research is an effort to establish the existence of vital connection between strategy in form of innovation and uncertain environment. Although it is different from existing researches in form it focuses on service industry but essence is the same that it highlights the importance of strategy in relationship between uncertain environment and organizational performance as emphasized by Swamidass & Newell (1987); Vickery et al. (1993); Ward et al. (1995); Badria et al. (2000) in manufacturing industry. In line with the results of existing studies it points out the environmental concerns emerge as having considerable effects on strategy and that thriving organizations (high performers) go for more innovational strategies in reaction to uncertain environmental factors as compare to low performing organizations. By putting the discussion in to nutshell, it can be said that although changes in the external environment is not in the control of organization but it can assess these changes by deeply analyzing the factors contributing towards uncertainty of the environment. Correspondingly, uncertain environment push up organizations to enhance their innovation capacity and move towards better performance. So, the end point of the whole story is that to achieve escalated performance an organization must focus on competitive strategy of innovation as a response to uncertain environment.

Current study is also valuable in the sense that it looks at the broad perspective of innovation which occupies the whole of product, process and administrative innovation and provides inclusive results. Overall this study provides comprehensive results of its proposed hypotheses and adds to the literature in different ways. Firstly, this study is vital when viewed in relation to today's highly competitive environment where to meet the customers' demand is a challenging task for organizations and where several forces are needed to work in collaboration to achieve a goal of improved performance. Secondly, this study finds out the contribution of organizational innovation to achieve the ultimate target of elevated organizational performance which is highly required in such an aggressive business world of cellular sector. Thirdly, its results can be utilized in all emerging sectors such as banking, telecom and software development industry etc. of Pakistan, India and Bangladesh because these countries share similar type of cultural context and business markets.

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