

Reinventing Public Sector for Innovativeness and Performance: A Case Study of University of the Punjab, Lahore

Sajida Nisar

University of the Punjab, Lahore, Pakistan.

Nasira Jabeen

University of the Punjab, Lahore, Pakistan.

Labiba Sheikh

University of the Punjab, Lahore, Pakistan.

ABSTRACT

Today's complex and competitive work environment has urged organizations both public and private for revisiting their practices, management styles and attitudes for improved performance. There is a great realization that when an organization adopts innovativeness, creativity and state of the art practices in all of its dimensions, it becomes successful. Literature on this subject also reveals that public sector organizations universally suffer from bureaucratic behaviors, centralized systems and rigid practices and therefore, needs more of such innovativeness through reinventing their existing ways, behaviors and systems (Moghaddam et al., 2015, Osborne and Gaebler 1992). This study towards its attempt towards reinventing the public sector organization aims to access how organizational innovativeness impacts the performance using University of the Punjab as a case in point. The study sample consisted of 50 head of departments. The study used a modified instrument that measures both innovative orientation, which is based on the extensively tested Covin and Slevin (1989) scale and innovation management, which is based on Stevenson's (1983) conceptualization of innovation as a set of opportunity-based management practices. Performance is multi-dimensional in nature; therefore, both financial and non-financial performance indicators have been used. Relationships between these constructs have been analyzed through PLS-SEM (Partial Least Square Structural Equation Modeling). The results demonstrate that a greater strategic orientation and better reward philosophy positively influence organizational performance and satisfaction. Limited evidence was found about the direct relationship between innovative orientation and financial performance. The results indicate that there is limited innovative orientation and innovation management in University of the Punjab which has theoretical and practical implications. The study offers recommendations for reinventing public sector through bringing in innovativeness, efficiency and agility towards improved organizational performance.

Key Words: **Innovative Orientation, Innovation Management, Organizational Performance, Reinventing, Public Sector, Efficiency**

Introduction

Today's complex and competitive work environment has urged for a change in the attitudes and management styles of individuals working in private and public

sector organizations. In organizations adopting innovativeness, proactive learning, decentralization, participation and autonomy, performance has become synonymous with working principles. Employees within such organizations are encouraged to think of innovative ideas to improve organizational processes and to bring new products and services into the marketplace. These activities, in turn, are essential for improved organizational performance (Moghaddam, Khorakian, & Maharati, 2015, Osborne and Gaebler, 1992). However, the prevalence of bureaucracy, types of structure, reward philosophies and traditional ways of performing activities have stalled the growth of innovative orientation in government organizations (Sadler, 2000). With an emphasis on maintaining the status quo, government organizations have failed to take advantage of surrounding opportunities. In order to compete and sustain in the competitive environment, government organizations need to focus attention on enhancing the quality standards, empowering employees, re-inventing systems and adopting innovative orientation as well as its effective management for effective performance (Moghaddam et al., 2015).

The continuity of innovative orientation supported by innovation management in an organization is vital to enhance its performance. This relationship is validated in western societies (Fox, 2005) and within Iran's work setting (Moghaddam et al., 2015). Present research is an attempt to provide empirical evidence about the role of organizational innovativeness in enhancing the performance of higher education institutions of Pakistan. The changing demands for higher education institutions to be more responsive to their stakeholders and increased competition have made the environment more turbulent to meet the varying needs of globalization (Wong, 2008).

Within the context of higher education sector, its performance and effectiveness are evaluated in terms of how effectively the institutions respond to its internal and external stakeholders. The students are the customers associated with the universities who experience a process of transformation and attain academic values (Bargh, Scott, & Smith, 1996). The shift of higher education institutions towards "customer services" has resulted in the incorporation of business elements in the work setting such as increased values assigned to competition, the shift towards delegation and democratic management styles and acknowledgement of the importance of innovative knowledge (Wong, 2008). Other stakeholders include the faculty and staff working in the universities responsible for academic development and university administration. The donors for higher education institutions and employers of university graduates associated with the academia are other influential stakeholders who can influence decisions of the institutions by being members of various academic councils and other regulatory bodies (Collis, 1999). In addition, government being the major donor for budgets of higher educational institutions demands accountability by public sector entities (Ewell, 1990).

In their attempts to respond to all the internal and external stakeholders, higher education institutions need to reinvent their practices and systems through

*Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore*

adopting an innovative orientation and competitive approach to meet the varying customers' needs (Collis, 1999). Therefore, higher educational institutions in Pakistan need to allow room for innovativeness and creativity and develop this attitude among leadership, faculty, graduates, and stakeholders.

Organizational Innovativeness

Research on innovativeness in organizations has been conducted with reference to corporate sector with different units of analysis including individuals, teams and overall organizational performance (Fox, 2005). Numerous definitions and measures have been developed to describe the concept of organizational innovativeness. The term "innovativeness" derives from the innovation which means "something novel or new in fashion" (Long, 1983). Initially economists made the first attempt to study the concept of innovativeness in depth. Cantillon (1931/1755), a French economist, considered innovative people to be risk-takers who exploit opportunities to maximize returns. Drucker (1985) saw innovative people as entrepreneurs and individuals who use innovation as a tool to exploit change as an opportunity.

Within the management perspective, Miller and Friesen (1982) attempted to highlight the prominence and recurrence of innovation within conservative and modern organizations. Conservative model assumes that organizations will engage in innovation only in response to challenges faced by competitors or changing consumer demands. Alternatively, within modern organizations, product innovation is rigorously pursued regardless of associated risks and is seen as a means of achieving competitive advantage. Miller (1983) summarized that an innovative organization has the distinct characteristics of willingness to take considerable risk, expolite market offerings and to act in a proactive manner. Since the resent administrative and governance reform place a lot of emphasis in reforming the public sector organizations through invoking a reinventing spirit in them demanding innovativeness, efficiency, flexibility and responsiveness, this research, focus on public organizations' innovativeness and innovation management using University of the Punjab as a case in point. It is argues that organizational innovativeness is a multi-dimensional concept that combines individual innovative orientation and focuses on its continuity with the help of innovation management.

Innovation Orientation

Prevalence of innovation orientation in an organization is considered as a key element of high performing organizations. According to Miller (1983), innovative orientation refers to the implementation of novelty in product development, undertaking challenges and acting in a proactive manner to build competitive advantage. Based on the concept Covin and Slevin (1989) developed a model of

innovative orientation. This study adopts the model suggested by Covin and Slevin (1989) including the dimensions of 1) innovativeness, 2) risk-taking and 3) proactiveness to measure the innovative orientation dimension in public organizations.

Innovativeness refers to bringing novel ideas and showing creativity in developing new products and processes. It is an important component of a high performing organization as it reflects an organization's tendency to engage in investigation of new phenomenon and experimentation; that leads to developing new products (Lumpkin & Dess, 1996). *Innovative risk-taking* is defined as an organization's tendency to borrow large sums of money and utilizing these resources to conduct business in a turbulent and ambiguous environment (Miller & Friesen, 1982). *Pro-activeness* can be defined as a firm's forward-looking perspective and future-oriented formulation strategy process (Miller, 1987).

Innovation Management

According to Stevenson (1983), innovation management style centers on the pursuit and utilization of surrounding opportunities without getting concerned about available organizational resources. Stevenson (1983) characterized innovation management as opportunity focused management practices and presented a continuum of innovative and administrative management styles as its opposite ends. While, innovative organizations are focused on and driven by opportunities, administrative organizations tend to make the efficient use of available resources (Stevenson & Gumpert, 1985). Innovation management is measured through the scale established by Brown et al., (2001) and includes the dimensions of 1) management structure, 2) entrepreneurial/creative culture, 3) resource orientation, 4) reward philosophy and 5) strategic orientation.

Strategic orientation refers to the strategy formulation process of the organization and the factors, which influence this process. Managers in innovative and proactive organizations take advantage of surrounding opportunities while developing an organizational strategy (Brown, Davidsson & Wiklund, 2001). *Resource orientation* refers to the organizational decisions regarding ownership, distribution and utilization of resources (Brown, Davidsson & Wiklund, 2001). Proactive organizations utilize existing resources to innovate and create value (Schumpeter, 1936). *Management structure* includes the level of formality and concentration. Entrepreneurial organizations have a management structure that is characterized by less formality, low levels of hierarchy and flexibility (Brown, Davidsson, & Wiklund, 2001). *Entrepreneurial or creative culture* is characterized by flexibility and presence of an autonomous workforce. In organizations fostering innovation, managers' admire their subordinates' success and encourage them in failure as well for the sake of learning. They encourage organizational innovation and communicate with dissenting people to develop them (Van de van et al., 1989). In terms of *reward philosophy*, in comparison to traditional organizations where seniority-based pay system prevails, individuals in such organizations are

*Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore*

rewarded based on their performance and their contribution to achieving the overall organizational objectives (Gomez-Mejia & Balkin, 1992).

Organizational Performance

Organizational performance is a widely researched concept in management sciences, yet there is no consensus on a single definition because of its varied meanings. The definition can vary according to the indicators employed (Rauch et al., 2009). According to Javier (2002) performance refers to the 3E's (economy, efficiency and effectiveness) of an organizational program. Ricardo and Wade (2001) defined performance as an organization's ability to achieve its goals and objectives.

Studies have reported the use of financial (objective) and non-financial (subjective) measures of organizational performance (Lumpkin & Dess, 2001; Moghaddam et al., 2015; Zahra & Covin, 1995). Because performance is multi-dimensional, this study uses both financial and non-financial performance indicators.

Relationship among constructs

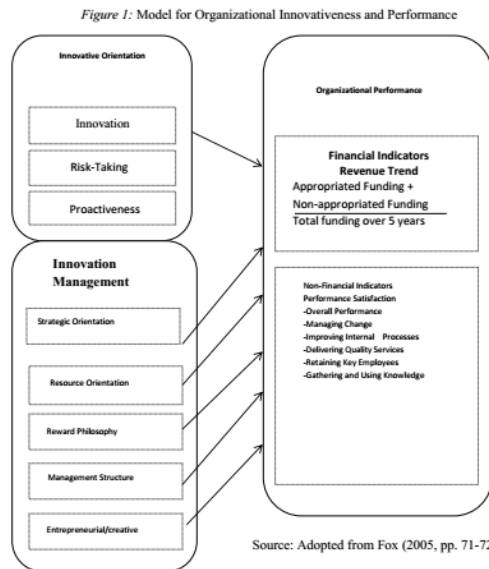
Improving organizational performance is one of the primary objectives of this research. The significance of adoption and continuity of organizational innovativeness to improve organizational performance has been acknowledged in the literature (Antoncic & Hisrich, 2004; Lumpkin & Dess, 1996; Wang, 2008; Zahra, 1991; Zahra & Covin, 1995). Previous studies have suggested positive outcomes for organizations fostering innovative and creative culture (Hussain et al., 2015; Li, Huang, & Tsai, 2009; Moghaddam et al., 2015; Mokaya, 2012; Rauch, Wiklund, Lumpkin & Frese, 2009). Innovative and creative activities within an organization are a source of competitive advantage, which ultimately lead to improved organizational performance irrespective of public or business sector. It is assumed that public sector organizations can improve their innovative orientation by implementing organic organizational structures and adopting an entrepreneurial culture that supports employee empowerment and encourages participative decision-making (Kim, 2010). Consequently, by reinventing themselves and implementing innovative strategies combined with the attitude of risk-taking, proactiveness and innovation, public sector organizations including public universities are expected to gain an advantage against their competitors in today's turbulent environment. Therefore, both of these constructs are important organizational dynamics that need to be explored within the Pakistani context.

Contribution of the Study

This study aims to make contribution to the existing literature in following ways:

1. The concept of organizational innovativeness has gained increased attention in the 21st century due to the increased concern for organizational efficiency, effectiveness, responsiveness and agility. Many researchers (Moghaddam et al., 2015; Mokaya, 2012; Rauch, Wiklund, Lumpkin, & Frese, 2009; Zahra & Covin, 1995) have identified it as an important factor in achieving high levels of organizational performance. Despite having a plethora of empirical evidence, suggesting that innovative orientation positively influences the organizational performance; limited research has been conducted on this issue within the specific context of public sector as well as in the specific context of Pakistan.
2. This study attempts to make an important contribution to theory and knowledge by confirming the validation of this relationship within the context of the higher education sector of Pakistan and more specifically in the University of the Punjab. Findings of the study will contribute to advancing the body of knowledge about the dynamics of organizational innovativeness. This research will extend the findings to Pakistani context and will provide avenues to examine the relationship between these constructs in a public university ultimately promoting creativity and innovative orientation for improved performance.

Schematic Diagram



*Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore*

Research Hypotheses

Based on the theoretical framework of the study, the proposed hypotheses are:

H1: A greater innovative orientation is positively associated with organizational performance.

H2: A greater strategic orientation is positively associated with organizational performance.

H3: A higher resource orientation is positively associated with organizational performance.

H4: A flexible/organic management structure is positively associated with organizational performance.

H5: A better reward philosophy is positively associated with organizational performance.

H6: A greater innovative orientation in the culture of the University of Punjab is positively associated with organizational performance.

Method

Participants

For data collection, heads/directors of different departments/institutes of the University of the Punjab were targeted. The heads of the departments/institutes were selected as respondents as they could provide an accurate description of an organization's performance. Being the largest public university in Pakistan, University of the Punjab has 73 departments, centers and institutes. Using the random sampling technique, a sample of 50 departments was drawn from the data set. The sample was diverse ranging over a number of departments across different disciplines. Ultimately, responses were collected from 50 different departments, providing sufficient variation for construct validation.

Measure

The first part of the questionnaire was an organizational-level scale of organizational innovativeness. In order to get a complete assessment of organizational innovation, this study has used a modified instrument that measures both innovative orientation, which is based on the extensively tested Covin and Slevin (1989) scale and innovation management, which is based on Stevenson's (1983) conceptualization of innovativeness behavior as a set of opportunity-based management practices. The innovative orientation scale comprised of a combination of three dimensions including innovativeness, proactiveness and risk-taking. The innovation management scale explored the five distinct dimensions of entrepreneurial/creative culture, reward philosophy, management structure, resource orientation and strategic orientation as discussed in the literature review.

These items were measured through eight-point opposite statement interval scale. The questions were arranged in order to avoid response set contamination.

The second part of the questionnaire measured the dependent variable of organizational performance. Performance is multi-dimensional in nature; therefore, this study used both financial and non-financial performance indicators. To measure the economic success of the organization, the rate of revenue change over five years was calculated. To investigate non-financial performance, performance satisfaction index, developed by Fox (2005) had been used in this study. In the performance satisfaction section, a six-point Likert-scale, with 1 representing unsatisfactory and 6 representing satisfactory was used.

Data Collection

Data were collected from directors/heads of 50 departments. The questionnaires were personally administered. If a meeting was not arranged, the questionnaires were delivered to the offices of the directors. Participants were provided with cover letters explaining the aim of research and confidentiality of the responses received. From the 52 questionnaires administered, 50 questionnaires were returned, all of which were complete and contained valid responses. The response rate was about 96%.

Results

Data was analyzed through partial least square (PLS) path modeling, reliability analysis and other descriptive statistics. Table 1 presents the descriptive statistics for entrepreneurial orientation and entrepreneurial management.

Table 1: Mean and Standard Deviation of Variables

Variables	Minimum	Maximum	Mean	Std. Deviation
Innovativeness	1.00	8.00	4.83	2.11
Proactiveness	1.00	8.00	5.18	2.07
Risk- taking	1.00	7.67	5.17	1.85
Resource orientation	1.00	6.67	4.35	1.37
Reward philosophy	1.00	8.00	4.29	2.17
Entrepreneurial/creative culture	1.00	7.80	3.32	1.76
Management structure	1.00	7.40	4.02	1.80
Strategic orientation	1.00	7.33	4.49	1.76
Performance	1.17	6.00	4.60	1.02

*Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore*

The research model consists of inner model (structural model) and outer model (measurement model). The model was analyzed through partial least square (PLS) path modeling using SmartPLS software. This tool enables to provide correct estimation for path models with small sample sizes (Hulland, 1999).

Measurement Model with Perceived Financial Performance

Convergent and discriminant validity of the measures was assessed to determine the construct validity and reliability of the model (Hulland, 1999). Convergent validity is a measure of internal consistency and is evaluated by calculating individual item reliability, Cronbach's alpha and Average Variance Extracted (AVE). Reliability results are given in Table 2.

Table 2: Coefficients of Reliability

Constructs	Cronbach's Alpha
Performance	0.934
Innovation	0.909
Proactiveness	0.898
Risk Taking	0.938
Strategic Orientation	0.926
Resource Orientation	0.590
Management Structure	0.938
Reward Philosophy	0.933
Entrepreneurial culture	0.948

Convergent validity was further strengthened by evaluating the average variance extracted (AVE) for each construct in the model, presented in Table 3. The value for each construct is greater than 0.5, thus establishing the convergent validity of the constructs (Fornell & Larcker, 1981).

Table 3: Average Variance Extracted (AVE)

Constructs	AVE
Entrepreneurial/creative culture	0.827
Innovativeness	0.923
Management structure	0.804
Performance	0.757
Pro-activeness	0.906
Reward philosophy	0.938
Resource orientation	0.511
Risk taking	0.891
Strategic orientation	0.878

Table 4 presents the results of discriminant validity of the constructs to establish the distinctiveness of the constructs involved in the model. The AVE of all the constructs shared on itself as indicated by values in diagonal elements in matrix is greater than the inter-construct correlations; represented by off-diagonal elements, thus reflecting adequate discriminant validity (Fornell & Larcker, 1981).

Table 4: Discriminant Validity

	EC	INN	MS	PER	PRO	RP	RO	RT	SO
Entrepreneurial/creative culture	0.909								
Innovativeness	- 0.232	0.961							
Management structure	0.083	0.478	0.897						
Performance	- 0.187	0.544	0.424	0.870					
Pro-activeness	- 0.068	0.628	0.285	0.441	0.952				
Reward philosophy	0.071	0.291	0.587	0.472	0.158	0.968			
Resource orientation	0.032	0.313	0.455	0.199	0.100	0.337	0.715		
Risk taking	- 0.220	0.715	0.395	0.526	0.458	0.420	0.326	0.944	
Strategic orientation	0.134	0.475	0.544	0.491	0.395	0.384	0.425	0.515	0.937

Structural Model with Perceived Financial Performance

To access the significance of the proposed hypotheses, R² value for the independent-dependent relationships and beta values of path coefficients were calculated (Al-Gahtani, Hubona, & Wang, 2007; O'cass, 2002). The structural model is presented in Figure 2.

Reinventing Public Sector for Innovativeness and Performance: A Case Study of University of the Punjab, Lahore

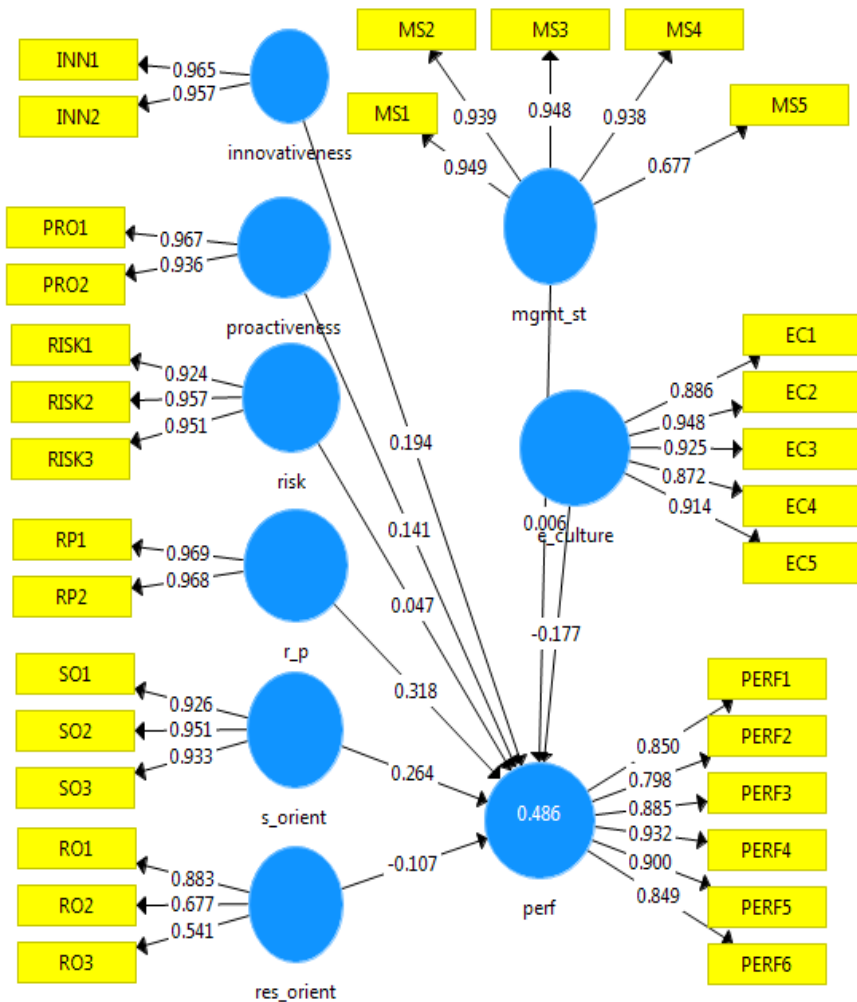


Figure 2: Structural Model with Perceived Financial Performance

The model as a whole explains 48.6% ($R^2 = 0.486$) variation in organizational innovativeness as indicated in Fig. 4.1. The path coefficients along with their t-values provided evidence of the acceptance or rejection of the proposed hypotheses. The impact of entrepreneurial/creative culture ($\beta = -0.17$, $t = 0.920$), management structure ($\beta = 0.01$, $t = 0.030$), resource orientation ($\beta = -0.107$, $t = 0.591$), and innovative orientation comprised of innovativeness ($\beta = 0.194$, $t = 0.923$), risk-taking ($\beta = 0.047$, $t = 0.953$) and proactiveness ($\beta = 0.141$, $t = 0.246$) on organizational performance is not significant. A better reward philosophy ($\beta = 0.318$, $t = 2.105$) and greater strategic orientation ($\beta = 0.264$, $t = 1.884$) positively influence organizational performance.

Table 5: Path coefficients with t-values

	Path coefficients	t-values
Innovativeness	0.194	0.923
Pro-activeness	0.141	0.953
Risk-Taking	0.047	0.246
Strategic orientation	0.264	1.884*
Resource orientation	-0.107	0.591
Management structure	0.006	0.030
Reward philosophy	0.318	2.105**
Entrepreneurial culture	-0.177	0.920

*= Significant at 0.1 level of significance

**= Significant at 0.05 level of significance

Measurement Model with Budgeted Values

Convergent validity was strengthened by evaluating the average variance extracted (AVE) value for each construct in the model. According to Fornell and Larcker (1981) AVE value of the construct should be above 0.5 to establish convergent validity but AVE value of less than 0.5 is acceptable if composite reliability of the constructs is above 0.6. Table 6 indicates that the convergent validity of the constructs is valid.

Table 6: Average Variance Extracted (AVE)

Variables	Composite Reliability	Average Variance Extracted (AVE)
Entrepreneurial/creative culture	0.915	0.684
Innovativeness	0.620	0.494
Management structure	0.866	0.579
Proactiveness	0.860	0.754
Reward Philosophy	0.862	0.763
Resource Orientation	0.733	0.488
Risk taking	0.871	0.696
Strategic orientation	0.831	0.628

Table 7 presents the results of discriminant validity of the constructs. The AVE of all the constructs shared on it as indicated by values in diagonal elements in matrix is greater than the inter-construct correlations; represented by off-diagonal elements, thus reflecting adequate discriminant validity.

Reinventing Public Sector for Innovativeness and Performance: A Case Study of University of the Punjab, Lahore

Table 7: Discriminant Validity

Variables	EC	INN	MS	PRO	RP	RO	R	SO
Entrepreneurial/creative culture	0.827							
Innovativeness	-	0.70						
Management structure	0.308	3						
Proactiveness	0.135	0.19	0.76					
Rewards philosophy	-	0.20	0.46	0.86				
Resource orientation	0.042	0.40	0.59	0.25	0.87			
Risk taking	0.092	0.38	0.31	0.11	0.24	0.69		
Strategic orientation	-	0.38	0.30	0.59	0.41	0.25	0.83	
	0.181	0	9	6	7	9	4	
	-	0.30	0.53	0.45	0.43	0.45	0.38	0.79
	0.015	4	7	6	6	5	2	2

Structural Model with budgeted values

The percentage change in revised budgets from 2009-10 to 2014-15 was taken up as the measure of financial performance. The structural model proposed in the theoretical model given in Fig. 3 is estimated. The estimated model is presented in Figure 3. The model as a whole explains 27.9% ($R^2 = 0.279$) variation in organizational entrepreneurship.

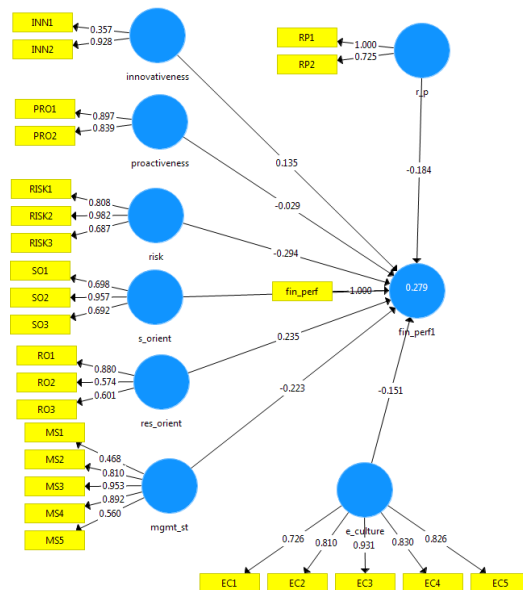


Figure 3: Structural Model with Actual Values of Financial Performance

The path coefficients along with their t-values provided evidence of the acceptance or rejection of the proposed hypotheses. The impact of entrepreneurial/creative culture ($\beta = -0.151$, $t = 0.862$), management structure ($\beta = -0.223$, $t = 1.106$), resource orientation ($\beta = 0.235$, $t = 1.244$), and innovative orientation comprised of innovativeness ($\beta = 0.135$, $t = 0.572$), risk-taking ($\beta = -0.294$, $t = 1.022$) and proactiveness ($\beta = -0.029$, $t = 0.146$), reward philosophy ($\beta = -0.184$, $t = 0.895$) and strategic orientation ($\beta = 0.316$, $t = 1.210$) on organizational financial performance is not significant.

Table 8: Path coefficients with t-values

	Path coefficients	t-values
Innovativeness	0.135	0.572
Pro-activeness	-0.029	0.146
Risk-Taking	0.294	1.022
Strategic orientation	0.316	1.210
Resource orientation	0.234	1.244
Management structure	-0.223	1.106
Reward philosophy	-0.184	0.895
Entrepreneurial culture	-0.151	0.862

Discussion

This study investigated the association between organizational innovativeness and performance of University of the Punjab. Organizational innovativeness aids an organization to flourish in the dynamic working environment. In their attempts to respond to all the internal and external stakeholders, higher education institutions need to adopt an innovative orientation and competitive approach to meet the varying customers' needs (Collis, 1999).

However, various departments working within University of the Punjab have disagreement with innovative management structures and creative culture. For organizational financial performance the five year trend indicates that there is a change in the funding of departments working within University of the Punjab. Results of PLS path modeling indicate that only strategic orientation and reward philosophy contribute to the dependent variable performance satisfaction. However, none of the independent variables significantly influence the dependent variable, financial performance. The dimensions of organizational innovativeness are ineffective within the context of university of the Punjab and do not contribute to the financial performance, because being a public sector entity no consideration to financial performance is given. Prevalence of traditional methods and compliance to tried principles and practices prevent organizational innovativeness and creativity by inhibiting innovative behaviors. This study highlights the need

***Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore***

for implementing innovative orientation within university setting to yield improved performance. With a new wave of change in society; characterized by rapid technological advancement and rigorous competition, adoption and implementation of entrepreneurial and creative culture can help the institution to achieve its mission.

Limitations

As with every research enquiry, this study has some inherent limitations. This study is being conducted within the context of University of the Punjab. Therefore, results need to be validated within other contexts and wider population to enhance the generalizability. The current research has employed the cross-sectional research design that evaluates the relationship between independent and dependent variables and no inferences can be made about causality.

Future Research Directions

This research has provided opportunity for furthering research in the field of innovativeness, creativity and reform in public sector. The study used a single respondent approach, future researches may focus on multiple respondents such as employees working at various levels within an organization to provide input about innovative orientation of the organization. Further research is also needed to validate the relationship among the studied variables in other types of educational institutions and also in other professions as well. Moreover, future researchers can integrate other dependent variables such as employee performance and satisfaction. Other variables that interact with organizational entrepreneurship and business performance may be included as mediator or moderator variables to study the innovativeness-performance relationship.

Recommendations

Based on the findings of this study, higher education institutions can enhance organizational innovativeness in public sector universities through reinventing and by promoting entrepreneurial and creative culture and principles. The results of the study suggest that strategic orientation and innovation reward philosophy must be promoted as these two contribute significantly to the organizational performance. To move towards opportunity-based strategic orientation, focus should be shifted from resources at hand to surrounding opportunities. Information must be gathered about the past practices that have inhibited pursuing market opportunities and specific patterns must be identified to improve internal systems that support strategic orientation. Enhancing the reward philosophy requires that employees must be rewarded using a combination of direct and indirect pay in form of recognition, learning opportunities etc. Rewards must be linked to the performance of the employees and public organizations need to go beyond tenure based

rewards. To successfully meet the demands of the stakeholders, higher education institutions need to promote innovativeness and proactiveness. To ensure successful execution of innovativeness, obstacles to organizational flexibility must be identified, existing procedures must be revised and careful investment should be made in human capital, since it is the responsibility of university faculty to incorporate innovativeness in work routines. Training programs should be outlined to develop innovative and risk-taking behaviors in university faculty.

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***Reinventing Public Sector for Innovativeness and Performance: A Case Study of
University of the Punjab, Lahore***

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Biographical Note

Ms. Sajida Nisar is In-charge Director, Institute of Business Administration University of the Punjab, Lahore, Pakistan.

Prof. Dr. Nasira Jabeen is Director, Institute of Administrative Sciences & Dean, Faculty of Economics and Management Sciences University of the Punjab, Lahore, Pakistan.

Ms. Labiba Sheikh is Assistant Professor at Institute of Business Administration, University of the Punjab, Lahore, Pakistan.