

Linking Top Management Support and IT Infrastructure with Organizational Performance: Mediating Role of Knowledge Application

LIER AUX APPUIS DU TOP MANAGEMENT ET D'INFRASTRUCTURE EN ITT AVEC LA PERFORMANCE ORGANISATIONNELLE : ROLE MEDIEATEUR DE LA DEMANDE DES CONNAISSANCES

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Abstract

The current study is conducted with the objective to measure the influence of top management support and IT infrastructure on knowledge application and the effects of knowledge application on organizational performance. Moreover, the mediating effects of knowledge application between the relationship of management support and IT infrastructure with organizational performance have also been investigated. Data has been collected from branch managers, operation management and other key position holders from different branches of all local private, local nationalized and foreign banks working in Pakistan. As per findings, both management support and IT infrastructure has positive and significant effect on knowledge application and also knowledge application has positive significant impact on organizational performance. Moreover, knowledge application has significant mediating role between the relationship of management support and IT infrastructure and organizational performance. The study is concluded with the implications, limitations and future area of this topic to be explored in future.

Key words: Top Management Support; IT infrastructure; Knowledge Application; Organizational Performance; Banking Sector; Pakistan

Résumé

La présente étude est menée avec l'objectif de mesurer l'influence du soutien des cadres supérieurs et d'infrastructure TI sur l'application des connaissances et les effets de l'application des connaissances sur la performance organisationnelle. En outre, les effets

médiateurs de l'application des connaissances entre la relation de soutien à la gestion et l'infrastructure informatique avec la performance organisationnelle ont également été étudiés. Les données ont été recueillies auprès de directeurs de succursales, la gestion des opérations et autres titulaires de postes clés de différentes branches de tous les locaux privés, les collectivités locales des banques nationalisées et étrangers qui travaillent au Pakistan. Comme les conclusions, le soutien par la gestion à la fois une infrastructure informatique et a un effet positif et significatif sur l'application des connaissances et aussi l'application des connaissances a des effets positifs impact significatif sur la performance organisationnelle. En outre, l'application des connaissances a significative rôle de médiateur entre la relation de soutien à la gestion et l'infrastructure informatique et de la performance organisationnelle. L'étude est conclu avec les implications, les limites et la région de l'avenir de ce thème à explorer à l'avenir.

Mot-clé: Soutien à la gestion Haut; l'infrastructure informatique; Application des connaissances; la performance organisationnelle; le secteur bancaire; le Pakistan

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INTRODUCTION

The business situations are changing day by day. Either the businesses are related to manufacturing sector or non-manufacturing sector, financial or non-financial sector, industry or service sector, knowledge is always considered as important factor in organizational success. Fast pace of business and challenging environment encourage

the top management to develop the vision, strategies and goals for employees to generate, share and apply knowledge. Human resource is imperative component of the organizations and knowledge reside in the minds of employees. The encouragement of the management in the form of knowledge supportive culture and appropriate infrastructure in knowledge creation, acquiring and dissemination is critical.

Business environment is very dynamic and decisive. Organizations strive for their growth by competing in influential and competitive environment. Certain variables like capital, market share, market growth rate, return on investment, customer retention, innovation, technology, shareholder equity effect performance and growth of organizations. Knowledge management is assumed to be major part of various segments like it is related to Government sector, financial sector or academic sector. The knowledge management has multidimensional scope. It includes acquisition, creation, sharing, dissemination, identification, storing and utilization of knowledge that is vital for businesses (Büchel & Raub, 2002). In this connection, various scholars analyzed the framework of knowledge management capability in relationship with different knowledge management enablers. For instance, a framework assessing the effects of knowledge infrastructure on organizational effectiveness has been developed (Gold, Malhotra, & Segars, 2001; Khalifa & Liu, 2003; Smith, 2007). However, such studies did not provide a thorough explanation of knowledge management practices with detailed organizational components and organizational success (Khalifa & Liu, 2003).

Zheng, Yang, & McLean, (2010) are of the view that there are some gaps in literature regarding the mediation of knowledge management practices between different organizational components and organizational effectiveness. To address such gaps, (Zheng, et al., 2010) developed a framework of knowledge management practices and explored its mediating roles between the relationship of organizational culture, structure and strategy and organizational effectiveness. Second, management support is generally not discussed in knowledge management studies. (Nonaka & Takeuchi, 1995) discussed the effects of managerial support on knowledge management but only managerial support by middle level management to implement the organizational strategies has been explored in his study. Similarly, Lee & Choi, (2003) discussed support by middle level management for knowledge management practices. In the present study, management support is considered as top management support including provision of necessary resources, funds and infrastructure required for knowledge management practices. Secondly, the corporate environment of Pakistan is different from that of western countries where these studies have been conducted. For instance, in the Pakistani business environment, senior

managers are not usually involved in working processes actively and due to high centralization there is still a huge gap between layers of management. Moreover, it is stated in previous studies that top management make decisions about the future direction of a company, scrutinize the decisions of CEOs, and make decisions regarding profit allocation (Lee & Choi, 2003). Gold, et al., (2001) stated, “the use of key informants for knowledge management purposes can come from those in the organization that have access to, and use of, the organization’s knowledge” (p.197). Alavi, Kayworth, & Leidner, (2006) emphasized the importance of the role of middle managers, who are charged with integrating the viewpoints of those in top and bottom levels of management, and in which there will be no improvement in an organization without this integration. Informants for knowledge management can be any organizational members in an organization, but for the current study, the targeted sample should satisfy three conditions: persons who can interact with top management, those who are actually working with the bottom line, and those who have a certain amount of autonomy to lead a project, team, or department.

Third, the relation among knowledge management processes and organizational performance has not been sufficiently established. (Gold, et al., 2001) explored the relationship of knowledge management capabilities and major business problems. They reported that knowledge infrastructure capability and knowledge process capability significantly improved organizational success. Further, (Khalifa & Liu, 2003) discovered that both knowledge infrastructure and knowledge process capabilities have a significantly positive and direct impact on organizational effectiveness. However, none of these studies attempted to identify how knowledge management processes contribute in corporate performance of the organization. The relationship between knowledge management and corporate performance of organization was still unknown, until the current study responded to that need by investigating the relationship between successful knowledge management practices and organizational performance. Specifically, this study used empirical evidence to identify the relationship between the three dimensions of knowledge management processes and organizational performance.

In order to address the literature gap and to provide the understanding about the knowledge management, the present study explored the effects of management support and IT infrastructure on knowledge application, and effects of knowledge application on organizational performance have been investigated. Moreover, the mediating effects of knowledge application between the relationship of management support and IT infrastructure with organizational performance have also been explored as per the suggestions of (Zheng, et al., 2010). The study has been conducted in banking sector of Pakistan and data

has been collected from key position of bank branches located in Lahore region. Statistical techniques such using SPSS 17 and AMOS 17 have been applied to analyze the data. Next part consists of hypotheses development. Third part is about the research design, fourth part is about the results and discussion following the conclusion of the research.

2. THEORY AND HYPOTHESES DEVELOPMENT

Knowledge management is “an organized, logical and consolidated practices of integrating organization wide activities in order to persuade and preeminent about organizational level goals (Rastogi, 2000, p.40). Generally researchers agree on the concept that knowledge management process is related to the activities in organizational context to generate a sustainable competitive advantage ((Davenport & Prusak, 1998; Zheng, et al., 2010) endeavored to assimilate the scrappy (fragmented) literature of knowledge management into a holistic view and develop a structure for knowledge management.

2.1 Top Management Support and Knowledge Application

Management support is required to promote knowledge culture in organizations, providing funds for knowledge infrastructure and enhance the capabilities of employees in creating, sharing, storing and dissemination of knowledge. It is an emerging trend in developing countries and important for the top management to support activities, attitudes and behaviors of employees for endorsement of knowledge. Business environment is changing gradually, which ultimately affects the resources of organizations. Organizations want to change in business via people by changing their behaviors. Knowledge management is playing the role of lifeline for organizations. Davenport & Prusak, (1998) suggested that knowledge management and organizational learning is important to company's success. Top management support provides the resources and financing for infrastructure, develop the strategies for knowledge segregation and for that purpose well groomed and trained executives are the integral part of the organizations for the support of senior management. The management support enhances the trust of employees in sharing, creating and use of knowledge. (Brockman & Morgan, 2003) explored that in knowledge management processes, it is the responsibility of the senior echelons, to provide equal growth opportunities to employees, encourage them, introduce effective incentive plans that match with their performance, motivated employees, established attitude and behavior that are necessary for successful implementation of knowledge management. The level of top management support is measured by the

success or failure of the organization (Liebowitz, 1999).

The support from senior management plays a vital role in effectiveness of knowledge based decisions (Wong & Aspinwall, 2006). The top management is required to provide timely funding for knowledge application. Moreover, they should emphasize on knowledge based culture and also enlighten the significance of knowledge management to take organization at a highest mark (Davenport & Prusak, 1998). In developing countries, knowledge management and its application has become a growing issue in the research of management. Talking particularly about Arab countries, management support has come up as a biggest supporter of knowledge management and it is leading towards a positive change in the professional behavior of workers (Hoffman, Hoelscher, & Sherif, 2005). Above all, in eastern culture, top managers are considered to be the highly authorized and as they endorse knowledge management, it builds up a level of confidence among individuals to apply the constructive knowledge. Thus on the basis of above mentioned studies, it is hypothesized that:

Hypothesis 1: Top Management Support has positive impact on knowledge application.

2.2 Technological Infrastructure and Knowledge Application

The most important enabler of the management progression of active knowledge is the technology. Gold, et al., illustrated that “for the creation of new knowledge, structural dimensions are required to stimulate the social capital. And technology is an important part of the structural dimensions” (2001, p.187). The idea of social capital status that “any social matter is supported by associations of relationship by associating all entity for capital owned collectively” (Vandaie, 2007, p.2). Information system of any organization is based on its technical capabilities that are derived from the Technical Infrastructure. These capabilities include networking facilities, faster computing systems and other technology based systems and procedures that are not only easy to use and handle but which also helps their users to exchange knowledge with the others (Gold, et al., 2001). Technical infrastructure is considered as necessary component of any organization to implement the information system as it makes the employees technically capable to create, transmit and apply knowledge. Information technology facilitates conversation and connects people with knowledge. It acts as a medium for the flow of knowledge. Moreover, Gold, et al., (2001) represented both KM process architects and KM infrastructural capabilities as predicting determinants of organizational effectiveness. Davenport & Prusak, (1998) highlights the importance of technological advancement in knowledge management effectiveness and its overall contribution in organizational performance. Keeping in view the theoretical and empirical relationship, the following hypothesis has been developed.

Hypothesis 2: Technological Infrastructure has positive impact on knowledge application.

2.3 Knowledge Application and Organizational Performance

The ability of employees to generate, disseminate and apply knowledge would obviously increase innovativeness and improvement in existing organizational procedures (Soo et al, 2002). Many researchers focused that knowledge management practices work as a strong determinant of organizational performance (McEvily & Chakravarthy, 2002). It is reported that knowledge management influence organizational performance through its contribution in developing the intellectual capital that leads to the competitive edge (Ndlela & Du Toit, 2001). Yang, (2008) found positive support for the relationship of knowledge management and strategic performance of a firm. Haas, (2006) explored knowledge utilization dimension of KM process and found it to be a positive contributor in organizational performance. In this regard, Anderson, (2000) found that KM processes, measured in terms of conversion, application, and protection, have a positive relationship to organizational capabilities. Recently, Fugate, Stank, & Mentzer, (2009) established support that effective KM practices interpretation, responsiveness and dissemination lead towards overall improvement in organizational performance. Extending the empirical confirmation for the Nexus of KM processes and organizational performance, Liao & Wu, (2009) established that effective implementation of KM results in positive outcomes of various organizational performance measures like, financial, market and partnership. Similarly, Wei, (2000) postulated that organizational performance is largely based upon successful implementation of knowledge management strategies. Keeping in view the stated above discussion, a strong theoretical and empirical base is noted for the relationship of knowledge management practices and firm performance. In the context of Pakistan, we didn't find any strong evidence about the relation of knowledge application and organizational performance. In order to address this gap, thus, the following hypothesis has been constituted.

Hypothesis 3: Knowledge application has positive effect on organizational performance.

2.4 Mediation of Knowledge Application between the relationship of Management Support and IT Infrastructure and Organizational Performance

As suggested by v(2010) mediation of knowledge management practices between organizational factors and knowledge application should be explored. As hypothesized in the study that both management support and IT infrastructure positive affect knowledge application and knowledge application positively affects organizational performance, thus, it is hypothesized that:

Hypothesis 4. Knowledge application has mediating role between management support and organizational performance.

Hypothesis 5. Knowledge application has mediating role between IT infrastructure and organizational performance

In addition the following research model has also been established to be tested in this study.

3. RESEARCH DESIGN

3.1 Target Population

The study was conducted in banking sector of Pakistan. Data was collected from all three types of banks such as local private, local nationalized and foreign banks working in Lahore region of Pakistan. As per statistics of State Bank of Pakistan, total number of branches working in Lahore region are 902 out of which there are 732, 136 and 34 branches of local private, local nationalized and foreign banks respectively working in Lahore region. This segregation was made through stratified random sampling technique. At second stage, the lists of all banks were obtained from their respective websites. From the lists of each bank, every third branch was been chosen through proportionate random sampling technique fied random sampling techniques. Thus, out of total branches, 244, 45 and 11 branches of local private, local nationalized and foreign banks respectively were chosen for data collection process. One questionnaire was distributed in each branch to branch manager or operations manager of the brach. The branch managers or operations manager were chosen because these positions are directly interacting with top management as well as with their branch staff and they are supposed to be well aware about the support and IT infrastructure provided by top management and about the performance of their respective bank.

3.2 Measurement and Instrumentation

Management support was measured by six items scale developed by Hsu, (2008). The item statements were related to analyze the support of top management to facilitate the knowledge management practices by providing funding and necessary resources. **IT Infrastructure** was measured by five items adopted from the scale developed by Gold, et al., (2001). The item statements are related to discover that organizational technologies provide support for employ communication, help them for searching and evaluating necessary information, facilitate the employees in learning activities, provide the collaborative network regardless of time and space and emphasis and allow the managers to retrieve the stored data. **Knowledge Application** was measured by five items by Gold, et al., (2001). The scale items reflected the application of knowledge that employees learned from experience and mistakes, utilize in new

product development, long term plans and growth of the organizations and quickly response to the critical competitive needs. **Corporate Performance** has been measured by five items scale adopted from the study of Yang, (2008). The construct described the quick response of market demand and changing environment, predict the new prospect for products and services, strong position of firm in the industry, competitive edge over competitors and substantial market share in term of its major rivals.

Note: All items have been measured on five point Likert scoring formate ranging from i.e. 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree and 5 = Strongly Agree.

3.3 Data Collection Method

As mentioned above, data has been collected from banking sector of Lahore region. In this regard, a well structured questionnaire has been administered with the approval of respective branch managers. A cover letter was also attached mentioning the method, objectives and fruitfulness of the study. Moreover, the respondents were also briefed about the research methods and objectives personally by thre researchers. The respondents were approached personally by the researchers. Total 301 questionnaire have been distributed out of which 258 respondents received which were found completed in all respect yielded the response rate of 85%.

Table 1
Mean, Standard Deviation and Correlation Matrix

Sr. No.	Variable	M	SD	1	2	3
1	Managerial Support	3.47	0.75	-		
2	IT Infrastructure	3.63	0.74	0.547**	-	
3	Knowledge Application	3.54	0.63	0.482**	0.351**	-
4	organizational Performance	3.72	0.75	0.455**	0.516**	0.501**

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

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2
Decisions of Hypotheses

Hypothesis No.	Independent Variable	Mediating Variable	Dependent Variable	Regression Co-efficient	Decision
1	Management Support	--	Knowledge Application	0.34**	Accepted
2	IT Infrastructure	--	Knowledge Application	0.11*	Accepted
3	Knowledge Application	--	Organizational Performance	0.60**	Accepted
4	Management Support	Knowledge Application	Organizational Performance	0.34** 0.60**	Accepted
5	IT Infrastructure	Knowledge Application	Organizational Performance	0.11* 0.60**	Accepted

** . Significant at the 0.01 level.

*. Significant at the 0.05 level.

4. RESULTS AND DISCUSSIONS

4.1 Validity and Reliability Testing

To check the validity of all measurement scale, we applied confirmatory factor analysis (CFA) as reflected in **Figure 2**. Through CFA, we check the factor loading of each item statements towards its respective scale. The CFA model yielded good fitness ratios as mentioned with CFA model in **Figure 2**. No ratio is beyond the fitness limit

as prescribed by different statisticians. Furthermore, it is reported that no item statement is found to have factor loading less than 0.50 as it is considered as fitness criteria thus no item statement has been removed and all items have been retained for data analysis purpose. Moreover the reliability of scales have been checked through reliability analysis using SPSS 17 and it has been found that Cronbach alpha scores of management support, IT infrastructure, knowledge application and organizational performance are 0.83, 0.82, 0.77, and 0.84 respectively.

Thus, all measurement scales are found to be reliable as per the suggestions of Nunnally, D'Angelo, & Craig, (1980).

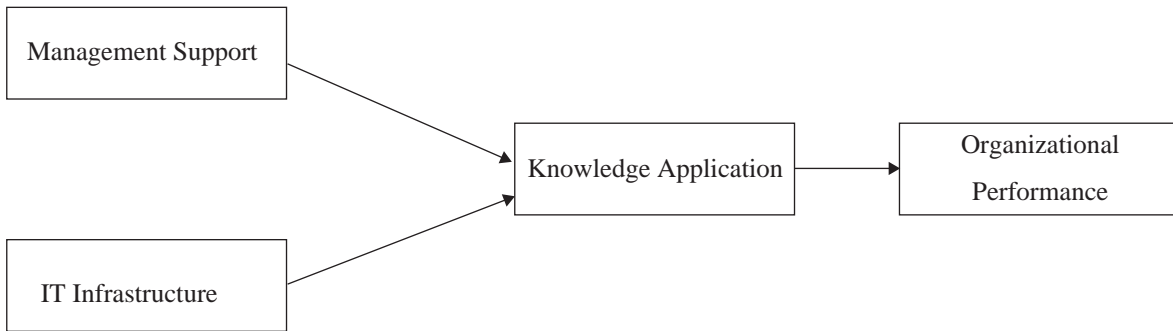
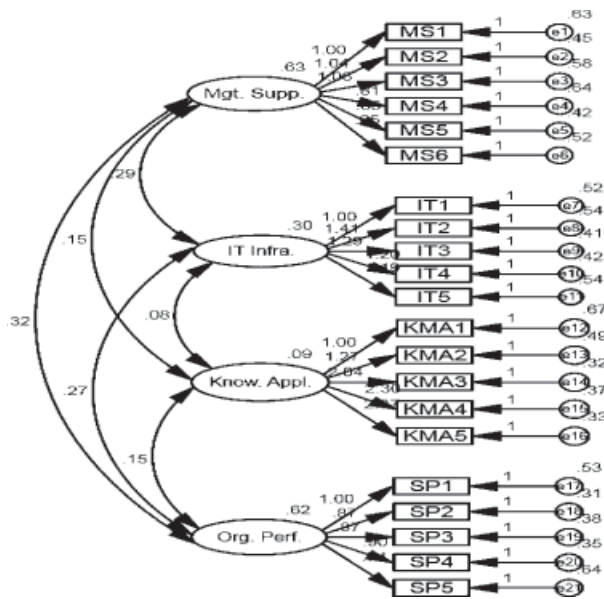
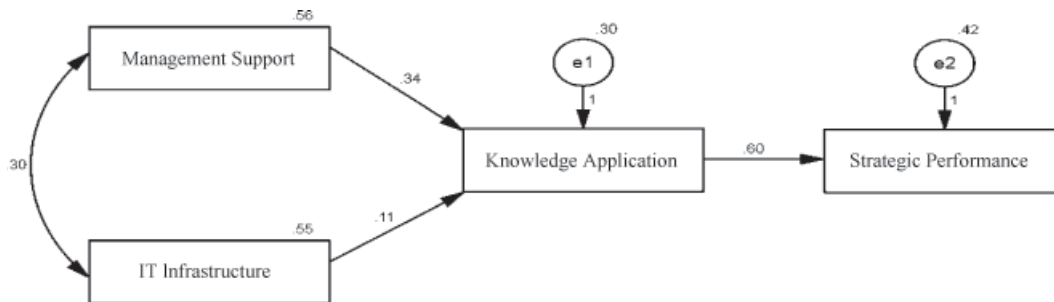


Figure 1
Hypothesized Research Model



Fitness Ratios: CMIN = 707.838; Degree of Freedom (DF): 183; CMIN/DF = 3.87; RMR = 0.06; GFI = 0.80; NFI = 0.74; CFI = 0.79; RMSEA = 0.10

Figure 2
Confirmatory Factor Analysis



Fitness Indicators: CMIN = 15.234; Degree of Freedom (DF): 3; CMIN/DF = 5.01; RMR = 0.05; GFI = 0.84; NFI = 0.87; CFI = 0.83; RMSEA = 0.09.

Figure 3
Structural Equation Model

4.2 Means, Standard Deviation and Correlation

Table 1 reflected the association between studied variables computed by Spearman correlation using SPSS 17. Apart from correlations, means and standard deviations of all variables have also been reported in the table. Respondents reported that means of top management support in term of provision of funds for knowledge management practices, availability of IT infrastructure, Knowledge application and organizational performance are 3.47, 3.63, 3.54 and 3.72 out of respectively which shows their levels are more than neutral stage. It is further reported that top management support is positively associated with IT infrastructure, knowledge application and organizational performance. Similarly, all other variables are correlated with each other at 99% confidence level. This shows the high correlation between studied variables.

4.3 Hypotheses Testing

In order to test the study hypotheses, Structural Equation Model (SEM) as reflected **Figure 3** has been applied through AMOS 17. SEM has been applied and is found to be reliable test in testing causal relationship between variables. SEM in this study is found to be good fit as all fitness indicators reported in **Figure 3** are fulfilling the fitness criteria suggested by statisticians. It is further reported that top management support has positive and significant effects on knowledge application as beta coefficient of this relation is 0.34 and significant at 99% confidence level. The relationship revealed that increase in provision of support by top management in term of provision of funds and necessary support for knowledge management significantly increase application of knowledge among banking sector employees, so the positive relationship between these variables leads us to accept **hypothesis 1**. The studies of various authors (Hsieh, Lin, & Lin, 2009; Lin & Lee, 2004) found the same result in large Taiwan firms as of our study. As far as effects of availability of Information Technology Infrastructure on knowledge application is concerned, the findings revealed that IT infrastructure is necessary base for application of knowledge as the coefficients of this relationship is 0.11 which is significant at 95% confidence level. This means that increase in the availability of IT infrastructure significantly increase in knowledge application among banking sector employees. Thus, **hypothesis 2** is accepted. Yang, (2008), discussed that IT effect on knowledge application. The results of the study are consistent with the results of current study and these results are also consistent with the study of Gold, et al., (2001). This study conducted in US on manufacturing and service sector. Some studies provided the same findings and reported significant positive impact of IT on knowledge application in different sectors (Al-Mabrouk, 2006; Hussain, Lucas, & Ali, 2004). (Alavi & leinder2001)) suggested that proper investment in

IT infrastructure and optimized use of organizational resources impact in greater knowledge application. Third hypothesis is about the effects of knowledge application on organizational performance. Data revealed that knowledge application has significant effects on organizational performance as the beta coefficient of this relationship is 0.60 which is significant at 99% level. The significant level of coefficients revealed that knowledge application is an important component for the enhancement of organizational performance. As the banking sectors is one of the highly competitive sector, thus banks have to strongly emphasize on application of latest knowledge to gain and sustain in competitive environment thus **hypothesis 3** is accepted. The organizations work in combination with different resources of knowledge management specifically knowledge application has significantly direct relation with organizational success (Mills & Smith, 2011; Selem & Khalil, 2007). In case of mediation of knowledge application between the relationship of management support and IT infrastructure Karriker & Williams, (2009) recommended that in order to prove the mediation of mediator, paths from independent variable to mediator and paths from mediator to dependent variable must be significant. In the present study, as stated earlier, both paths from independent variable such as management support and IT infrastructure to knowledge application are significant at 99% and 94% confidence level respectively. Similarly, knowledge application is found to have significant positive effects on organizational performance, thus knowledge application has significant mediating role between the relationship of management support and IT infrastructure with organizational performance. In other words, if organizations provides employees with necessary support and IT infrastructure for knowledge application, this would cause a significant increase in knowledge application process. In return, knowledge application significant and positively increase the performance of the organization. Such significant mediating effects of knowledge application lead us to accept **hypotheses 4 and 5**. The decisions of all hypotheses are also reflected in **Table 2**.

CONCLUSION

The present study explored the effects of top management support and IT infrastructure on knowledge application and the effects of knowledge application on organizational performance. Moreover, the mediating effects of knowledge application between the relationship of management support and IT infrastructure with organizational performance have also been investigated. It is revealed that both IT infrastructure and management support is strongly needed for the successful implementation of knowledge in the organizations. If an organization sufficiently provides support in term of funds

and learning culture and provides employees with latest information technology systems, the employees would enhance the implementation of knowledge application practices. Furthermore, it is revealed that organizational who where knowledge is being implemented successfully, it would significantly enhance the overall performance of the organization.

The study provides significant implications for banking management about the antecedents and consequences of knowledge application. The findings of the study recommend that banking management should put strong on provision of necessary support to employees and provide them a learning environment cultivated with latest information technologies in order to implement knowledge successfully and to get benefits from the application of knowledge in term of improvement in overall organizational performance. The study also has some limitations and future area of study to be explored in future. Firstly, data has been collected from self-reported response. As this is about the performance of the organization, the future research should analyze the financial measure in order to measure the organizational performance. Secondly, the data has been collected from banks working in Lahore region. To provide more accurate findings to be applied in all Pakistan, data from banks working in all major cities of Pakistan may be collected in future research. Moreover, the study can also be extended with the inclusion of other knowledge management practices such as knowledge creation and sharing.

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