

# ASSESSING THE IMPACT OF KNOWLEDGE MANAGEMENT ON INNOVATION: AN EMPIRICAL STUDY

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## ABSTRACT

*The aim of this study is to evaluate the association between organisational learning and innovation. Organisational learning include (a) Knowledge acquisition, Knowledge distribution, Knowledge interpretation, and organisational memory. Data has been collected from the employees working in education sector in Jammu. Confirmatory factor analysis has been used to validate the scales and check the reliability through cronbach's alpha. The hypotheses were tested with the help of structural equation modelling. The results showed that organisational learning have a significantly related to innovation. Further managerial implications have also been put forth.*

**Keywords: Organisational Learning, Knowledge Acquisition, Knowledge Distribution, Knowledge Interpretation, Organisational Memory, Innovation**

## INTRODUCTION

*In a competitive era, modern organisation adopts new technology in order to innovate successfully. It is accepted that knowledge, skills and competencies are the key drivers of innovation (Gratton, 2000; Iles, 1996). Innovation is the pooled of producing new knowledge in order to improve the performance (O'Sullivan & Dooley, 2008; von Stamm, 2003). The central theme to our understanding of how knowledge produces innovation. It is observed that knowledge management (KM) is a vital organisational tool that utilizes knowledge more effectively and efficiently. Many organizations focusing on knowledge management initiatives with a view to get better business processes, generate greater revenues, make financial savings, increase user acceptance and enhance the competitiveness (Chua and Lam, 2005). The aim of a firm applying knowledge management is merely to make the right knowledge available at the right time at the right place.*

Various researchers considered the KM activities such as exploration – knowledge generation or exploitation – knowledge application (He and Wong, 2004; Grant, 2002; arch, 1991). By catalysts the researchers mean those factors oriented towards the development of an internal environment for upgrading KM initiatives, since they permit dealings among organisational members to be enhanced, experimentation, the sharing of more ideas and willingness to codify, transfer and apply more knowledge and ideas for innovation (Bierly and Daly, 2002; DeTienne et al., 2004; Jansen et al., 2006; Singh, 2008).

Previous studies showed that KM significantly and positively associated with organisational innovation (Slavkovic and Babic, 2013, Liao and Wu, 2010). In spite of those studies, it is realised that there is no enough study is conducted that shows the association between KM and organisational innovation. Thus, the aim of this study is to examine the relationship between knowledge management and organisational innovation in education sector of Jammu region. Therefore, the study can contribute to the growing literature by evaluating the relationship between KM and innovation in Jammu context where published research on KM and innovation is relatively limited.

The paper is structured as follows. After introduction, review of literature focussing on organisational learning and organisational innovation is presented. Next, we develop a theoretical framework illustrating the KM and organisational innovation. The paper is concluded by highlighting knowledge management and innovation implications, limitations, and future research.

## **REVIEW OF LITERATURE**

### **Knowledge Management**

Due to rapid changes in globalisation, privatisation/deregulation, competition and technological advances, the importance of KM within organisations has increased (Mehta, 2008). Knowledge can be considered as the most relevant strategic resource for ensuring an organisation's long-term survival and success (DeCarolis and Deeds, 1999). Bharadwaj and Saxena (2005) viewed that knowledge management as a set of approaches and a systematic discipline that enable to upgrade the information and knowledge and create value in an organisation. It includes individuals, information, work-flows, best practices, alliances, and communities of practices. In addition to this, knowledge management as the process of critically managing knowledge and information that helps to meet existing desires and needs, to identify and develop existing and acquired knowledge assets and relics to develop new knowledge and ideas that facilitate to advantage of new opportunities and challenges. Gold (1991) defined KM consists of three interrelated practices like knowledge acquired, knowledge exchanged, and knowledge application. Darroch and McNaughton (2001) have considered knowledge management as a process

that include the formation of knowledge, management of the flow of knowledge within the organisation, and utilisation of knowledge in an effective way for the long-term assistance of the organisation. This conceptualisation is also considered by Narver and Slater (1995). The term of knowledge acquisition is considered as to acquire new knowledge; Knowledge distribution means transferring of the acquired knowledge; Knowledge interpretation refers to incorporating important aspects of knowledge through shared understanding and co-ordination for effective decision-making; and finally organisational memory refers to storing knowledge for future use in the form of rules, procedures, and other systems.

## **INNOVATION**

Innovation refers to introduce inventions and modified products and services into the market (Comlek et al., 2012). It is also defined as the adoption of new idea, product, method or service in an organisation (Jimenez and Valle, 2011). In additions to, through innovation, an organisation satisfy the customer, enhance the profit, improve product quality, process, build morale and also enhance the competition. An organisation may suffer from various losses if they cannot produce new quality product and services. In simple words we can say that it is vital weapon for organisations to compete in this compete business environment (Tan and Nasurdin, 2011). As cited in Jimenez and Valle (2011), Damanpour (1991) have identified innovation to be the composite of two elements- technical innovation and administrative innovation. Technical innovation includes new process and new products or services; while administration innovation includes new procedures, policies and organisational forms. The main characteristics of innovation are:

- 1) Introduction of new products and services;
- 2) Introduction of a new method of production;
- 3) Opening of a new market;
- 4) Finding a new source to supply the raw materials;
- 5) The creation of new form of an organisation.

### **Sources of innovation**

- 1) Continuous improvement in product quality and services, create new ideas and take suggestions from employees in operational areas.
- 2) Management should focus on employee team.
- 3) With the help of customer complaints, we innovate the product quality and services.

## **DIMENSIONS OF INNOVATION**

### **Technological innovation**

Technological innovation refers to developing and using technologies such as new

technical knowledge and technical inventions. It involves the adoption of an idea that directly effect on basic output processes (Daft, 1978). It has divided into two main parts (a) product innovation; (b) Process innovation (Chang, 2005).

Product innovation involves development of new product or service, changes in an existing design of the products, use of any new source for production, addition of any other feature and components in an existing products (Sohail, 2011). On the other hand, process innovation refers to a change in the way of creating a product or supplying a service which include change in technique, instruments and software (Tan and Nasurdin, 2011).

### **NON-TECHNOLOGICAL INNOVATION**

Non-technological innovation (administration innovation) refers to change in policies, procedures, and organisational structure or other non-technological way of achieving business objectives and it includes basic work activities within an organisation that is directly related to management.

The aim of this study explores the relationship between knowledge management and organisational innovation. A conceptual framework focussing on knowledge management and organisational innovation is developed.

### **Conceptual Framework and Hypotheses Development**

A theoretical framework that shows how organisational learning related

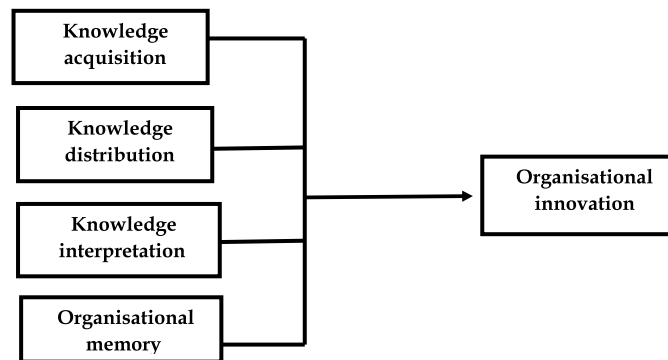


Figure 1: Conceptual framework representing knowledge management and organisational innovation linkage

## **LINKAGE BETWEEN KNOWLEDGE MANAGEMENT AND ORGANISATIONAL INNOVATION**

Knowledge management is the backbone of innovation. Organisational innovation is the root of knowledge processing and this processing generated by knowledge management (Cohen and Levinthal, 1990; Nonaka and Takeuchi, 1995). Knowledge management is an important variable for the firm that try to introduce new products / services or create new markets because the necessity to innovate continuously in an organisation that facilitate to enhances the competition into the market (Cefis and Marsili, 2005).

In this extent, it is necessary to expand those factors that contribute to innovate and facilitate the introduction of new ideas, products, services and systems in an organisation (Llorens et al., 2005). Organisational learning "supports creativity, inspires new knowledge and ideas and increases the potential to understand and apply them favours organisational intelligence and form a background for orientation to organisational innovation" (Garcia et al., 2007, pp-535).

Various researchers argued that knowledge management includes knowledge acquisition, knowledge distribution, knowledge interpretation and organisational memory, which positively related to organisational innovation. For instance Liao and Wu (2010) proposed that organisation learning positively related to organisational innovation; Salim and Sulaiman (2011) found the study of Malaysian SMEs, organisation learning has a positive impact on organisational innovation; Jimenez-Jimenez and Valle (2011) provide evidence that organisational learning positively relates to organisational innovation; Noruzy et al., 2013 also identified that organisational learning positively influence organisational innovation in the manufacturing firms they study; Lastly, Aragon-Correa et al. 2007 and Liao et al. 2008 also identified that organizational learning directly influenced innovation. In addition, Weerawardena et al. (2006) and Liao et al. (2008) concluded in their study that higher the learning, greater the innovation. Based on this aspect, the present study proposes the following hypotheses:

- **Hypothesis 1** Knowledge acquisition positively and significantly related to organisational innovation.
- **Hypothesis 2** Knowledge distribution positively related to organisational innovation.
- **Hypothesis 3** Knowledge interpretation positively and significantly related to organisational innovation.
- **Hypothesis 4** Organisational memory positively and significantly related to organisational innovation.

## **RESEARCH METHODOLOGY**

### **Sample**

The data were collected from six Government higher secondary school in Jammu region. All the respondents were contacted personally with due permissions from their respective institution heads. Census method was used for data collection. Questionnaires were sent to 250 employees, 226 useable questionnaires were returned and response rate was found to be 82%.

### **Generation of scale items**

The present study, based on thorough review of conceptual and empirical literature of knowledge management and organisational innovation identifying six dimensions. The items under each dimension covering almost all predictor of organisational learning and organisational innovation have been generated from the relevant literature, detailed discussion with the subject experts and academicians. A questionnaire was framed for the collection of required information. To ensure the active participation of respondents while filling the questionnaire, some of the similar items were phrased for maintaining the internal consistency and cross checking of the data. The items for organisational learning i.e. knowledge acquisition (7 items), knowledge distribution (5 items), knowledge interpretation (5 items) and organisational memory (8 items) have been generated from (Lopez et al., 2005) and the items used in organisational innovation i.e. technological innovation (9 items) and non-technological innovation (7 items) have been generated from (Beckman, 1997; Prajogo and Sohal, 2002; Palacios et al., 2009). All measures are based on five point likert scale. The scaling is-5 for completely satisfied, 4 for satisfied, 3 for neither satisfied nor dissatisfied, 2 for dissatisfied, 1 for completely dissatisfied.

### **Results**

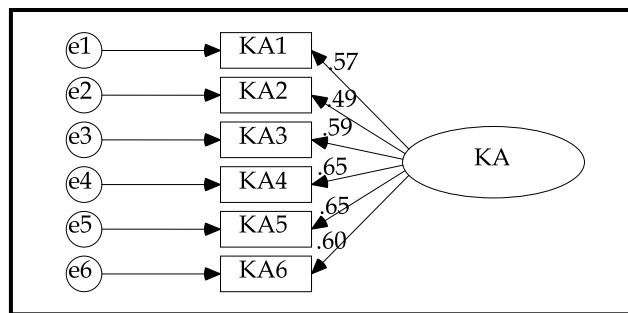
Reliability of the construct has been checked with the help of confirmatory factor analysis (CFA) before testing the hypotheses. CFA was conducted to check the goodness of model fit indices and structural equation modeling has been used for hypothesis testing.

### **Measurement Models**

Confirmatory factor analysis (CFA) has been used to check whether a relationship exist between the manifest and latent variables. The value of standardised regression weights (SRW) for the items, which were less than 0.50 are deleted (Hair *et al.*, 2006). Further, checked the goodness (greater than 0.90) and badness of model fit indices (less than 0.08), which were within the threshold limit (Table 1) (figures shown after references).

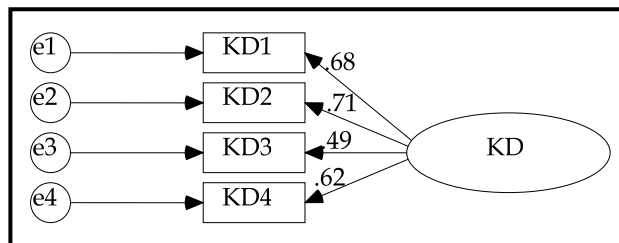
**Table 1: Model Summary of fit Indices**

Constructs	CMIN/DF	RMR	GFI	AGFI	NFI	CFI	RMSEA
Knowledge acquisition	2.591	.028	.964	.917	.918	.947	.085
Knowledge distribution	2.473	.018	.989	.943	.971	.982	.081
Knowledge interpretation	0.200	.004	1.000	.995	.999	1.000	.000
Organisational memory	1.925	.020	.976	.937	.962	.981	.065
Innovation	2.423	.033	.903	.864	.869	.918	.080



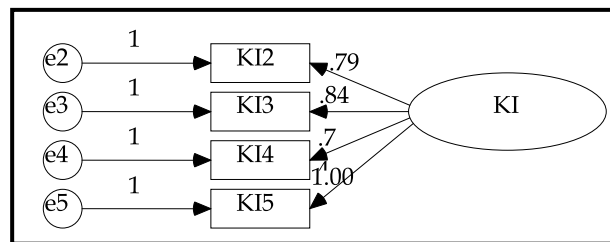
**Figure 2: Measurement Model of Knowledge Acquisition**

Key:KA- Knowledge Acquisition, e1-e6 errors of manifest variables of knowledge acquisition



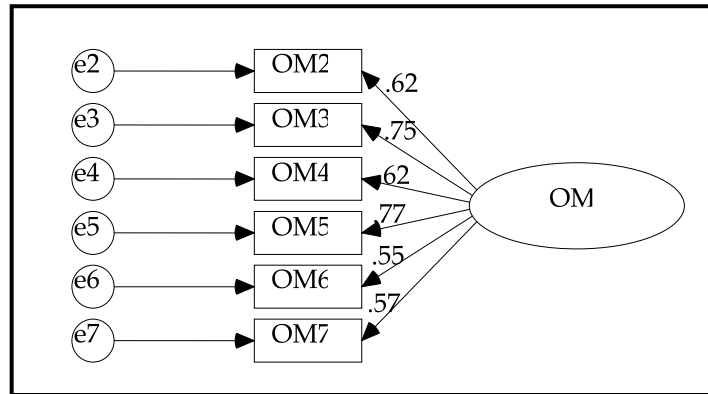
**Figure 3: Measurement Model of Knowledge Distribution**

Key:KD- Knowledge Distribution, e1-e4 errors of manifest variables of knowledge distribution



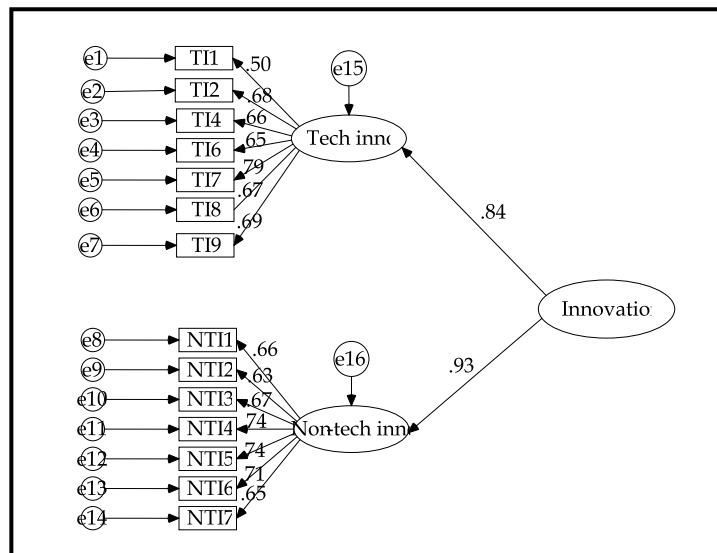
**Figure 4: Measurement Model of Knowledge Interpretation**

Key:KI- Knowledge Interpretation, e2-e5 errors of manifest variables of knowledge interpretation



**Figure 5: Measurement Model of Organisational Memory**

Key: OM- Organisational Memory, e2-e7 errors of manifest variables of organisational memory



**Figure 6: Second Order Measurement Model of Innovation**

Key: TI- Technological Innovation, e1-e7 errors of manifest variables of technological innovation, NTI- Non-technological innovation, e8-e14 errors of manifest variables of non-technological innovation

## RELIABILITY

Cronbach's alpha has been used to check the reliability of the construct (Cronbach, 1951). The value of cronbach's alpha equal to or greater than 0.70 indicate good reliability (Nunally, 1970; O'Leary-Kelly and Vokurka, 1998). In the present studies, value of cronbach's alpha for all construct are greater than 0.70 (Table 2). Further, the value of composite reliability for all constructs is above 0.70 (Table 2). Thus, the value of cronbach's alpha and composite reliability show that the scales are quite reliable.

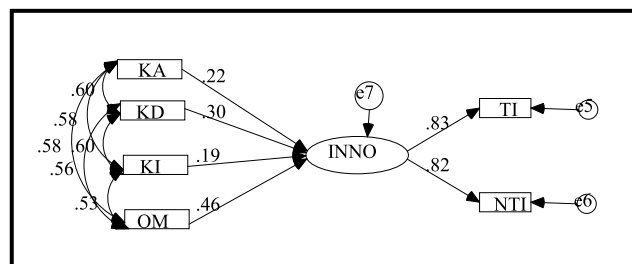


Construct	Items	SRW	T. Value	C.R	Alpha Value		
KA	KA1	.575	6.363	0.842	.761		
	KA2	.490	5.657				
	KA3	.592	6.491				
	KA4	.650	6.882				
	KA5	.655	6.908				
	KA6	.596					
KD	KD1	.676		0.816	.716		
	KD2	.707	7.017				
	KD3	.492	5.706				
	KD4	.620	6.730				
KI	KI2	.692	7.259	0.841	.751		
	KI3	.598	6.495				
	KI4	.668	6.774				
	KI5	.780					
OM	OM2	.617	6.849	0.871	.817		
	OM3	.748	7.664				
	OM4	.616	6.816				
	OM5	.769	7.755				
	OM6	.549	6.273				
	OM7	.571					
Inno	TI1	.523	6.536	0.890	.839		
	TI2	.636	8.769s				
	TI4	.631	7.578				
	TI6	.615					
	TI7	.838	9.050				
	TI8	.672	7.949				
	TI9	.642	7.676				
	NTI1	.618	7.928			0.910	.861
	NTI2	.704	7.914				
NTI3	.733	8.257					
NTI4	.754	8.777					
NTI5	.691	8.610					
NTI6	.653	8.364					
NTI7	.654						

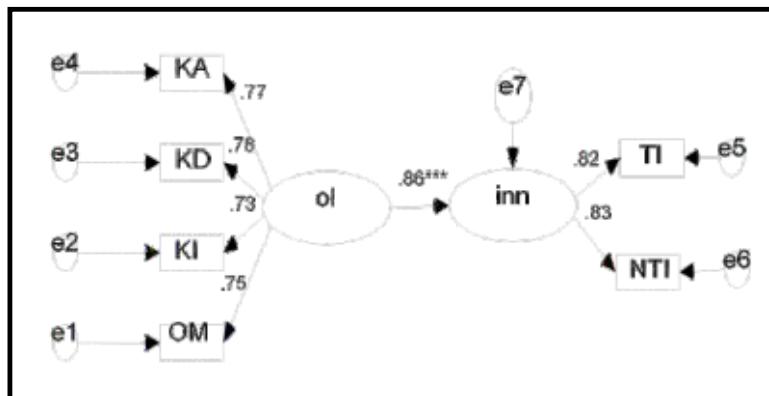
**Knowledge Management and organisational innovation- Structural modelling approach**

Structural equational modelling (SEM) has been used to test the hypotheses of the proposed framework, it is a multivariate statistical process that allows testing the casual relations among observed and latent variable (Kaplan, 2000). In the present study, the relationship between knowledge management and innovation has been assessed.

Through structural equation modelling, we assess the linkage between knowledge management and organisational innovation. The results revealed that knowledge acquisition, knowledge distribution, knowledge interpretation and organisational memory significantly and positively affects innovation ( $p < .05$ ; Figure 6). Therefore, hypothesis 1, 2, 3, and 4 is accepted. Further, we have checked impact of overall knowledge management on organisational innovation. The results revealed that there is significant and positive impact of knowledge management on organisational innovation ( $p < .05$ ; Figure 7).



**Figure 6: Impact of dimensions of KM on Innovation**



**Figure 7: Impact of KM on Innovation**

## DISCUSSION AND CONCLUSION

This paper empirically identify the relationship between knowledge management and organisational innovation in education sector in Jammu. The empirical finding support the knowledge management (i.e. knowledge acquisition, knowledge distribution, knowledge interpretation and organisational memory) contribute to innovate the firm's performance in education sector. In particular, it is found that knowledge management significantly and positive influence on the effectiveness of an organisation and thus extend research by Jimenez-Jimenez and Valle, 2011; Liao

and Wu, 2010; who found a positive relationship between knowledge management and organisational innovation. Further, in term of theoretical contributions, this research examined for the first time, the relationship between knowledge management and organisational innovation in education sector in Jammu. The current study is contributing to previous study by providing a support for positive relationship between knowledge management and organisational innovation. Theoretically, our findings implied that organisational innovation could be positively led by the knowledge acquisition, knowledge distribution, knowledge interpretation and organisational memory.

Knowledge management plays a vital role in creating innovative ideas and reach the organisational goals. Thus, we believe that firm can be innovative by organisational learning. Our findings strongly support the proposition that knowledge acquisition, knowledge distribution, knowledge interpretation and organisational memory positively related to organisational innovation. This study implies that firm should always tries to acquire new knowledge, share with each other, interpretation and use the knowledge in order to innovate and reach the competitive market. With the help of technology development, expanding the business areas and the business environment has become a competitive. Knowledge is articulated as the major sustainable competitive advantage in the new business concept (Ahmadi and Pishdari, 2010).

In a competitive world, creating a knowledge environment and increasing the capabilities and skills of human resources, which are required to create an organisation each member of which is looking for new and innovative information. With the learning, organisations can deals with various challenges and dynamic environment in an efficient and effective manner. In short, knowledge management helps to improve the organisation culture, system and policies in an efficient way through the acquisition, transfer, interpretation and use of knowledge.

Few limitations of this study need to be acknowledged. First, this study is limited to education sector only. Future research should be expanded in other sectors also, which could improve the generality of the findings. Second, since the study is conducted only in the government schools and its comparison with the private school will not be kept in the purview of the study. The comparative study of private and government school could be the part of the future research. Further, future research could also be expanded in other services sectors such as health and insurance. Lastly, future research should also explore the linkage between organisational learning, innovation, and performance.

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