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RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND ORGANIZATIONAL LEARNING: AN EMPIRICAL STUDY OF INFORMATION TECHNOLOGY SECTOR IN INDIA

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Abstract: *The main objectives of this paper were to study KM and OL in Information Technology organizations in India, to find the correlation between KM and OL, to find the correlation between sub-dimensions of KM and OL, to find the correlation between sub-dimensions of OL and KM, to see the association between subscales of KM and OL and to find out whether KM is a significant predictor of OL. The scope of the study was Information Technology sector organizations in India. The sample comprised of 248 respondents drawn from 10 Information Technology organizations in India. The results revealed a very significant positive correlation between KM and OL. The results further revealed that KM is a significant predictor of OL. Almost all other null hypotheses concerning KM and OL and their sub-scales vis-à-vis failed to be rejected.*

Keywords: *Knowledge Management, organizational learning and information technology organizations.*

I. INTRODUCTION

The business environment is influenced by many internal and external factors. Intangibles such as intellectual properties, intellectual assets, intellectuality, organizational learning, knowledge management and organizational innovation play a major role in business relationships. The Indian information technology (IT) sector has built a high stature for its standards of software development, service quality and information security in the national and international market- which has been acknowledged globally and it has helped in enhancing the buyer confidence. The industry continues to set benchmarks in quality and information security through a combination of provider and industry-level initiatives and by, creating greater awareness, strengthening the overall frameworks and facilitating wider adoption of standards and best practices.

Importance of studying Knowledge Management (KM) in today's scenario is profound. (**Litvaj and Stancekova 2015)** suggested that the embedment of KM in a company and the application of new and unused managerial strategies would help in coping with the turbulent changes in the global economy and staying competitive in the long term. (**Tayauova et al., 2014)** suggested that value of an organization depended on its employee's quality of knowledge. Today knowledge has become the major factor of production in the value-adding economic activities. Organization's internal efficiency and profitability can be maximized by using efficient KM **(Terzieva 2014).** By managing its knowledge assets, an enterprise can improve its competitiveness and adaptability and increase its chances of success **(Sanghani 2009)**. With the increase in information technology usage, many organizations in India have started using knowledge management initiatives. Majority of the research on KM have so far occurred in western industrialized countries. Thus there is a need to study KM in Indian IT organizations.
A systematic approach to Organizational Learning (OL) is required to retain and continuously update the wealth of knowledge related to Information Technology.

Vargas (2015) emphasized that OL plays very important role along with a matching leadership style to achieve higher levels of performance and innovation. Thus, there is a need to know the status of learning being transferred to the organization i.e. the extent to which organization learning takes place. Therefore, OL is chosen as one of the variable in the present study.

II. REVIEW OF LITERATURE

KM is defined as a process of knowledge creation, validation, presentation, distribution and application **(Bhatt 2001)**. According to **Horwitch and Armacost (2002),** KM is the creation, extraction, transformation and storage of the correct knowledge and information in order to design better policy, modify action and deliver results. According to **Holm (2001),** KM is getting the right information to the right people at the right time, helping people create knowledge and sharing and acting on information. KM can be summarized as a collaboration of strategies and practices that are used to create, acquire, disseminate and apply knowledge throughout the organization so as to cope with the changing environment. KM facilitates the retention and distribution of knowledge within an organization to gain competitive advantage. **(Gold et al., 2001)** described the following dimensions of KM- knowledge acquisition, knowledge conversion and knowledge application. **Bhatt (2001)** gave the following dimensions of KM – knowledge creation, knowledge validation, knowledge presentation, knowledge distribution and knowledge application. **Kruger and Johnson (2010)** found that KM ability is influenced by the elements such as process, content, policy, strategy, culture and technology. **Cheruiyot et al., (2012)** revealed that Institutionalization of KM is influenced by the organizational practices and technological infrastructure. **Schmitz et al., (2014)** found that learning culture helped in predicting KM.

OL can be said to occur when there is a change in the content, conditionality, or degree of belief of the beliefs shared by individuals who jointly act on those beliefs within an organization **(Sanchez 2005)**. OL refers to the activities which organizations do in transformation of learning capability including individuals and competitors **(Jerez-Gomez et al., 2005)**. **Miller (1996)** defined OL as acquisition of new knowledge by employees who are able and willing to apply that knowledge in making decisions or influencing others in the organization. **Dimovski (1994)** defined OL as a process of information acquisition, information interpretation and resulting behavioural and cognitive changes, which should in turn have impact on organizational performance. **Dodgson (1993)** defined OL as ways or processes by which organizations built and supplemented their knowledge bases about technologies, products and processes, and develop and improve the organizational efficiency and broad skills of their workforce. OL could be summarized as an area of knowledge within organizational theory that studies models and theories about the way an organization learns and adapts. In the hyper dynamic business context, OL is the process by which the organisation constantly questions existing product, process and system, identify strategic position, apply various modes of learning, and achieve sustained competitive advantage. **Huber (1991)** identified OL had four elements which included – knowledge acquisition, information distribution, information interpretation, and storing and retrieving into/from organizational memory. **(Jerez-Gomez et al., 2005)** considered OL to be of four dimensions - management commitment, system perspective, openness and experimentation and knowledge transfer and integration.

(Walczak 2008) argued that extensive research is required that examines KM and OL in different countries. OL initiatives along with KM put a positive influence on the overall performance of the organization **Winkelen and McKenzie (2007). Firestone and McElroy (2004)** have termed the relationship of KM and OL as intimate and argued that KM needs OL and OL needs practitioner base of KM. Thus, present study endeavours to find out the relationship between KM and OL.

III. METHODOLOGY

3.1 Present Study

The above mentioned and other similar studies made the plot for the present study. The authors attempt to study KM and OL in Information Technology organizations in India. In all 10 companies from the top 20 IT companies (source NASSCOM - the most representative body of IT/software industry, various trade publications, advertisements, internet, etc.) were studied.

3.2 Objectives

The paper studies the relationship between knowledge management and organizational learning. The main objectives of the study are as follows:

- To study the level of Knowledge Management and Organizational Learning in the selected IT organizations in India.
- To find the correlation between Knowledge Management and Organizational Learning.
- To find the correlation between sub-dimensions of Knowledge Management and Organizational Learning.
- To find the correlation between sub-dimensions of Organizational Learning and Knowledge Management.
- To find out the correlation between sub-scales of Knowledge Management i.e. acquisition, conversion and application.
- To find out the correlation between sub-scales of Organizational Learning i.e. management commitment, system perspective, openness and experimentation and knowledge transfer and integration.

- To find out whether Knowledge Management is significant predictor of Organizational Learning.

3.3 Hypothesis

H_1 There is a significant correlation between Knowledge Management and Organizational Learning.

H_2 There is a significant correlation between sub-scales of Knowledge Management and Organizational Learning.

H_3 There is a significant correlation between sub-scales of Organizational Learning and Knowledge Management.

H_4 There is a significant correlation between sub-scales of Knowledge management.

H_5 There is a significant correlation between sub-scales of Organizational Learning.

H_6 Organizational Learning is positively and significantly predicted by Knowledge Management.

3.4 Research Design

The study is descriptive and empirical in nature. 10 companies from the top 20 IT companies (source NASSCOM - the most representative body of IT/software industry, various trade publications, advertisements, internet, etc.) were chosen. A total number of 300 respondents from 10 IT organizations were approached, out of which 248 people have responded, thus yielding a high response rate of 82.66%.

3.5 Data Collection Tools

Primary data were collected through preliminary interviews and questionnaires ultimately. The KM scale developed by **Gold et al. (2001)** was used to undertake the study. The scale is multidimensional, suggesting three subscales, that is, Knowledge Acquisition, Knowledge Application and Knowledge Conversion as follows:

i. Knowledge Acquisition is defined as the process to seek and acquire new knowledge, create new knowledge out of existing knowledge through collaboration between individuals and business partners.

ii. Knowledge Conversion is defined as the ability to make knowledge useful.

iii. Knowledge Application is defined as the process oriented towards the use of knowledge.

The second part of the questionnaire focused on OL. The OL scale developed by **Jerez-Gómez et al. (2005)** was used to undertake the study. The scale is multidimensional, suggesting four subscales as follows:

i. Management Commitment is to recognize the relevance of learning and to develop a culture that promotes the acquisition, creation and transfer of knowledge as fundamental values.

ii. System Perspective entails bringing the organization's members together around a common identity.

iii. Openness and Experimentation is a climate that welcomes the arrival of new ideas and point of view, both internal and external, allowing individual knowledge to be constantly renewed, widened and improved.

iv. Knowledge Transfer and Integration refers to two closely linked processes, which occur simultaneously, rather than successively internal transfer and integration of knowledge.

3.6 Reliability and Validity Analysis

The reliability of the research instrument was tested using the reliability coefficient called cronbach's alpha. It was calculated to find out the internal consistency of the grouping of items. Satisfactory internal consistency is generally indicated by an alpha value of .60 and .70 or above. The alpha values of different standardized scales to measure KM and OL is shown in the table 1.
It was found that both the scales are internally consistent as all the values exceeded the minimum requirement.

Table I: Reliability Coefficients

Variables	**Cronbach's Alpha**	**No. of items**
Knowledge Management	.700	21
Organizational Learning	.711	16

Note: *Values of 0.70 and above testify strong reliability of the scale.*

IV. Data Analysis

Data were examined for outliers and possible errors prior analysis, and none were detected. The results (Table 2) indicated that means of KM (3.4702) and OL (3.6857) are above the scale mean 3. The sub-dimensions of KM and OL also score more than the

scale mean. It shows that there is high level of KM and OL in IT organizations.

Table II: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
KM	248	2.16	4.09	3.4702	.40882
KAQ	248	2.38	4.63	3.7434	.49723
KC	248	1.83	4.33	3.3804	.48158
KAP	248	2.00	4.43	3.2869	.46986
OL	248	2.07	4.57	3.6857	.50701
MC	248	2.00	4.60	3.8508	.53068
SP	248	1.67	5.00	3.5995	.70277
OE	248	1.50	4.75	3.5988	.68109
KTI	248	1.75	4.75	3.6935	.58129
Valid N (listwise)	248				

4.1 Results of Pearson's correlation (Correlation between KM and OL)

Pearson's correlation was used to investigate the relationship between KM and OL. As shown in Table (3), all the associations were found to be significant at 0.01 level and there was no violation of assumptions of linearity and homoscedasticity. The correlation between Knowledge Management and Organizational Learning is 0.731, significant at 0.01 significance level. The results of Pearson's correlation suggested that there is a very significant positive correlation between KM and OL. Therefore, the hypothesis (H_1) that there is a significant correlation between Knowledge Management and Organizational Learning is not rejected or may be accepted.

Table III: Correlations

		MC	SP	OE	KTI	OL	KAQ	KC	KAP	KM
MC	Pearson Correlation	1	.655**	.742**	.478**	.875**	.716**	.457**	.588**	.695**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000	.000
	N	248	248	248	248	248	248	248	248	248
SP	Pearson Correlation	.655**	1	.619**	.355**	.828**	.563**	.326**	.517**	.554**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000	.000	.000
	N	248	248	248	248	248	248	248	248	248
OE	Pearson Correlation	.742**	.619**	1	.421**	.865**	.690**	.488**	.615**	.707**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000	.000	.000
	N	248	248	248	248	248	248	248	248	248
KTI	Pearson Correlation	.478**	.355**	.421**	1	.676**	.444**	.259**	.352**	.417**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000	.000	.000

	N	248	248	248	248	248	248	248	248	248
OL	Pearson Correlation	.875**	.828**	.865**	.676**	1	.742**	.471**	.640**	.731**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000	.000	.000
	N	248	248	248	248	248	248	248	248	248
KAQ	Pearson Correlation	.716**	.563**	.690**	.444**	.742**	1	.617**	.622**	.886**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000	.000	.000
	N	248	248	248	248	248	248	248	248	248
KC	Pearson Correlation	.457**	.326**	.488**	.259**	.471**	.617**	1	.482**	.827**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000		.000	.000
	N	248	248	248	248	248	248	248	248	248
KAP	Pearson Correlation	.588**	.517**	.615**	.352**	.640**	.622**	.482**	1	.825**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000		.000
	N	248	248	248	248	248	248	248	248	248
KM	Pearson Correlation	.695**	.554**	.707**	.417**	.731**	.886**	.827**	.825**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	.000	.000	
	N	248	248	248	248	248	248	248	248	248

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

4.2 Results of Pearson's correlation (Correlation between KM and sub-dimensions of OL)

The results of Pearson's correlation (Table 3) show that all the dimensions of KM namely, knowledge acquisition (KAQ) (r= .742, p<0.01), knowledge conversion (KC) (r= .471, p<0.01) and knowledge application (KAP) (r= .640, p<0.01) have a positive and significant relationship with OL. Therefore, the hypothesis (H_2) that there is a significant correlation between Knowledge Management and sub-dimensions of Organizational Learning is not rejected or may be accepted.

4.3 Results of Pearson's correlation (Correlation between OL and sub-dimensions of KM)

The results of Pearson's correlation (Table 3) show that all dimensions of OL namely, managerial commitment (MC) (r= .695, p<0.01), system perspective (SP) (r= .554, p<0.01), openness and experimentation (OE) (r= .707, p<0.01), and knowledge transfer and integration (KTI) (r= .417, p<0.01) have a positive and significant relationship with KM. Therefore, the hypothesis (H_3) that there is a significant correlation between Organizational Learning and sub-dimensions of Knowledge Management is not rejected or may be accepted.

4.4 Results of Pearson's correlation (Correlation between sub-dimensions of KM)

The results of Pearson's correlation (Table 3) show that there is a very significant strong correlation

Table IV: Regression Model Summary of KM and OL in IT organisations

between KAQ and KC (r= .617, p= .000), KAQ and KAP (r=.622, p=.000) and KC and KAP (r=.482, p= .000). Therefore, the hypothesis (H_4) that there is a significant correlation between sub-scales of KM is not rejected or may be accepted.

4.5 Results of Pearson's correlation (Correlation between sub-dimensions of OL)

The results of Pearson's correlation (Table 3) show that there is a very significant strong correlation between MC and SP (r= .655, p= .000), MC and OE (r=.742, p=.000) MC and KTI (r=.478, p= .000), SP and OE (r= .619, p= .000), SP and KTI (r= .355, p= .000), OE and KTI (r= .421, p= .000). Therefore the hypothesis (H_5) that there is a significant correlation between sub-scales of OL is not rejected or may be accepted.

4.6 Results of Simple Linear Regression test (Impact of KM on OL)

The results are presented in the Table 4, 5 & 6 below.

Table IV

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.731[a]	.534	.532	.34680	1.482

Predictors: (Constant), KM, Dependent Variable: OL

Table V: ANOVA- KM and OL

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	33.906	1	33.906	281.909	.000
	Residual	29.587	246	.120		
	Total	63.493	247			

Predictors: (Constant), KM, Dependent Variable: OL

Table VI: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.541	.189		2.867	.005
	KM	.906	.054	.731	16.790	.000

Dependent Variable: OL

The result of Simple Linear Regression test suggests that KM is a significant predictor (Result of ANOVA in **Table 5**, with p-value= .000) of OL with R=.731 (**Table 4**), slope of regression line= .906 and intercept=0.541 (**Table 6**). This implies that dimensions of KM explained 73.1 % of the variance in OL in the case of IT organizations. Therefore the hypothesis (H_6) that OL is positively and significantly predicted by KM is not rejected or may be accepted.

V. FINDINGS AND DISCUSSION

The findings of this study indicate that there is a significant positive correlation between Knowledge Management and Organizational Learning. This indicates that when Knowledge Management variables have high values, the Organizational Learning is likely to be greater. The high correlation between Knowledge Management and Organizational Learning is obtained since the organizations acquire knowledge by benchmarking with the other organizations in the sector and apply it with the support of top management to build a culture that fosters overall improvement in various processes of the organization. Thus, the knowledge acquired from outside is converted to its own needs and applied to achieve higher level of learning with the support of top management. The results are in line with the findings of **Schmitz et al., (2014)** and **Firestone and McElroy (2004)**. Organizational Learning factors: managerial commitment, system perspective, openness and experimentation and knowledge transfer and integration

were found to be significantly correlated with Knowledge Management. It was also found that Knowledge Management is a significant predictor of Organizational Learning.

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