Abstract. *There has been a transformation of an era of information scarcity to information surplus, so the key global pressures on management are knowledge identification, creation and dissemination. The development of knowledge management represented one of the most significant management movements in such environment. Using the literature review, this paper developed a knowledge management instrument and it tested a conceptual model linking knowledge management practices and organizational performance, using descriptive statistics and structural equation modeling technique. Primary data was collected from SMEs of three industries i.e. software, pharmaceutical and textiles in North India. The study confirmed the relationship between adoption of knowledge management practices and improved organizational performance, competitiveness and employee retention rates in the selected SMEs.*

Keywords: knowledge capturing, knowledge sharing, knowledge transfer, knowledge storing, knowledge reuse, knowledge management, knowledge management practices, SMEs.

IMPACT OF KNOWLEDGE MANAGEMENT PRACTICES ON SELECTED INDUSTRIES: A STRUCTURAL EQUATION MODELING APPROACH

Ritika SAINI
DAV College
10D, Sector 10, Chandigarh,160011, India
e-mail: ritika.er@gmail.com

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1. Knowledge management practices in SMEs

Various authors have argued that nowadays knowledge management (KM) practices provide companies with a competitive advantage as a result of their impact on the organization's ability to act in more efficient, sustainable and innovative ways. For example, Brătianu and Orzea (2010) critically analyzed the knowledge dynamics model elaborated by Ikujiro Nonaka and found that knowledge creation is a dynamic capability that enables firms to achieve a sustainable competitive advantage on the market. Their conclusions are seconded by Mitchell (2010) who views the ability to create knowledge as a critical foundation for an organization's capability to be dynamic on an ongoing basis. Besides dynamism and sustainability, KM also influences the degree of innovativeness that a company demonstrates, as Viju (2010) has showed by studying the way in which explicit and tacit knowledge become assets for an organization which seeks to create an advantage. The existence of knowledge and the development of a knowledge sharing culture with a learning environment create opportunities for innovation and creativity.

Small and medium enterprises (SMEs) are an important part of modern economies, providing employment, generating innovation, creating wealth, reducing poverty, enhancing the standard of living and contributing to the areas in which they operate. The strength of SMEs lies in motivation, internal networking, tacit knowledge in unique skills, shorter informal communication, less bureaucracy and greater proximity to market. But SMEs face resource, finance and skills scarcity and managers often do not have enough managerial expertise and organizational capabilities which imply poor strategic business planning and human resource management. Knowledge management implementation is said to be the best way to overcome these problems and improve SMEs ability in innovation and organizational performance (Liao and Wu, 2010; Sáenz, 2009; Ho, 2008).

Knowledge management practices in SMEs also overcome the problem regarding the lack of resources, peculiar management problems and high employee turnover rates. Knowledge management provides the means for SMEs to overcome poor a business environment and to change the complex business environment into a more manageable context. Knowledge management practices help to remove resource constraints, decrease cost of products and create innovative applications for mature products that make companies move ahead of their competitors.

The benefits that small or medium enterprise (SMEs) can derive from sharing knowledge have long been recognized and were well documented. Muhammad et al. (2011) in their primary study indicated that knowledge management is one of the significant factors which contribute to organizations' strive to improve their performance. The practices of knowledge management, namely knowledge generation, knowledge codification, knowledge sharing and knowledge utilization were significantly and positively correlated with one another as well as with organizational performance. Beimbornet al. (2010) calibrated a theoretical model that showed that knowledge management identifies relevant resources by facilitating the identification

and acquisition of relevant knowledge. Knowledge management supports the assimilation of knowledge by building and organizing a firm's knowledge stock and also encourages the transformation of knowledge comprising the combination of prior and newly acquired and assimilated knowledge by providing means to update and share knowledge. Claiborne (2010) presented knowledge management as the process of synthesizing the information flowing into an organization resulting in an improvement in the effectiveness of organization performance. Knowledge management has the ability to make sense of and use information flowing into an organization to create a competitive advantage. It improves organizational performance, facilitates innovation, and creates sustainable competitive advantage. Wastyn and Czarnitzki (2010) concluded in their study that knowledge management techniques have a positive effect on the innovative performance of a firm. Moreover, the firms should carefully select the techniques of knowledge management depending on the goals in its innovation strategy. The investment in employees to share knowledge and implementation of codified knowledge management policy also leads to reduction in cost. Zheng et al. (2010) examined the mediating role of knowledge management in the relationship between organizational culture, structure, strategy, and organizational effectiveness through a survey of 301 organizations. The results suggested that knowledge management fully mediated the impact of organizational culture on organizational effectiveness, and partially mediated the impact of organizational structure and strategy on organizational effectiveness. Further, they said that successful knowledge management is believed to have the potential of enhancing an organization's competitive advantage, customer focus, employee relations and development, innovation, and lower costs. Bontis and Serenko (2009) tested a comprehensive causal model that illustrated the inputs and outputs of effective knowledge management practices. They discussed that organizations need to be concerned about knowledge retention. Organizations with management leadership that is weaving knowledge retention within its succession planning, work force development and human capital strategies do well in the future. Successful knowledge management could be the chief determinant for the survival of an enterprise in a knowledge-based economy.

Govindand Ravindran (2009) used experimental design and showed that knowledge management was increasingly becoming an integral and important element in corporate strategy. The knowledge sharing among employees have exhibited improved organizational performance. Liao and Wu (2009) laid down that organizational performance measured in terms of financial, market and partnership depends on effective implementation of knowledge management processes. Their results indicated that knowledge management processes have a positive effect on organizational performance. Wei et al. (2009) assessed the perceived importance and actual level of implementation of five preliminary success factors, four knowledge management (KM) strategies and three knowledge management processes towards the industry performance. They asserted that successful achievement of overall organizational performance was based on actual application of knowledge management processes. It showed a positive relationship between knowledge management processes namely construction, embodiment and deployment and organizational performance.

Enz (2008) indicated that intangible assets such as knowledge management, organizational learning and market orientation allow an organization to develop those abilities that enhance competitive advantage leading to superior market performance. These intangibles enabled an organization to continuously develop existing resources and new resources were needed to be created leading to superior performance as the main outcome. Jennex et al. (2008) defined measures of knowledge management outcomes in terms of organizational performance as enhancement of product and service quality; productivity; innovative ability and activity; competitive capacity and position in the market; proximity to customers and customer satisfaction; employee satisfaction; communication; knowledge sharing; transparency and its retention. Ho (2008) proposed a conceptual structural equation model to investigate the relationships among self-directed learning (SDL), organizational learning (OL), knowledge management capability (KMC) and organizational performance (OP). They demonstrated the direct and indirect effect of SDL on OP from the perspectives of KMC and OL and argued that the existence of an organization depends on increased knowledge management capabilities during self-directed learning and organizational learning which affects organizational performance.

Finally, Haddad and Ribière (2007) explored that knowledge management can be useful for identifying the organizational structures, processes and informational technologies for measuring, collecting and analyzing costs and risks incurred before, during and after the project. The knowledge management framework could be used to collect data on the acquisition activities and processes such as writing requests for proposals, contractor evaluation and selection, predicting needed resources, and identifying risks. Such knowledge can be used on future projects to improve the acquisition processes by allocating adequate resources and identifying risks to improve the likelihood of project success.

2. Research methodology

The present study sampled the three states of North India i.e. Punjab, Haryana and Himachal Pradesh. These states were characterized by high per capita income, considerable contribution to GDP and large number of SMEs. The major contributing industries in these states were textiles, software and pharmaceuticals industry. These industries were selected on the basis of production, size, growth rate and exports from the state. There were also major hubs of these industries in the selected states.

2.1. Sample size and sampling design

To collect data, the present study used judgmental-cum-convenience sampling where a sample of 300 respondents was collected from the SMEs of three states of North India viz. Punjab, Haryana and Himachal Pradesh in three industries: textiles, software and pharmaceutical. The top level managers like Chief Executives, Chief Knowledge Officers (CKO), Chief Information Officers (CIO), HR executives and other management experts of the organization were contacted to get the questionnaire filled.

Table 1

Sample size and response rate

S.No	Industry	No. of SMEs	Response rate
1	Textiles	100	90%
2	Software	100	80%
3	Pharmaceutical	100	80%

Out of the 300 SMEs in our sample, 260 responses were received. Out of 260 responses, 10 responses were invalid as questionnaire was not complete. 250 responses were found to be usable. The overall response rate was 83%.

2.2. Research instrument

The first part of the questionnaire comprised the list of knowledge management practices used by SMEs. The twelve items had been framed after the in-depth study of literature to access the level of adoption of knowledge management practices by the SMEs. Knowledge management was divided into five processes namely knowledge capturing, knowledge sharing, knowledge transfer, knowledge storing and knowledge reuse. There were three items each for knowledge capturing and knowledge storing and two items each for knowledge sharing, knowledge transfer and knowledge reuse process. All the items were rated on 5 point Likert Scale ranging from Strongly Agree (5) to Strongly Disagree (1) (Table 2).

Table 2

Knowledge management practices

Label	KM process	Knowledge management practices	Source
KM1	Knowledge capturing	Captures external knowledge from industrial associations, competitors, clients and suppliers	Salina and Wan Fadzilah (2008) Sarker et al. (2005) Edler (2005) Bailey and Clarke (2000)
KM2		Captures knowledge from public research institutions, universities and government laboratories	
KM3		Has dedicated resources for acquisition and obtaining internal knowledge from experienced workers and managers.	
KM4	Knowledge sharing	Encourages workers to participate in project teams with internal and external experts	
KM5		Has a culture intended to promote knowledge sharing	
KM7	Knowledge transfer	Problems, failures, experiences and method of working are discussed openly to avoid making similar mistakes in the future.	
KM8		Regular meetings are done for discussion of professional projects	
KM9	Knowledge storing	Databases of good work practices, lessons learned, skills and listings of experts are regularly updated.	
KM10		Written documentation of lessons learned, training manuals, good work practices and articles is done	
KM11		The information systems and knowledge stored in the systems are constantly upgraded	
KM12	Knowledge reuse	People are encouraged to access and use knowledge saved in systems.	
KM6		Has policies intended to improve knowledgeable worker retention	

The second part of the questionnaire collected data about the imperatives of implementing knowledge management practices. This consisted of the 12 measurement items that had been framed after intensive literature review (Table 3).

Table 3

Measurement items for imperatives of knowledge management practices

Label	Items	Source	Outcome
IM1	Competitive advantage	• Brătianu (2010) • Claiborne (2010) • Wei et al. (2009) • Harveston et al. (2005)	The overall impact of knowledge management systems was to differentiate products from low cost substitutes in the market place and enables the organization to achieve a sustainable competitive advantage for organization.
IM2	Capture and use knowledge from outside sources	• Hazeri et al. (2009)	The capture, sharing and leveraging of individual and group knowledge as a corporate asset was most likely to succeed where the principles and practices of knowledge management were applied.
IM3	Sharing or transferring of knowledge with partners/clients	• Jennex et al. (2008) • Chadha et al. (2007)	Knowledge transfer, firm level learning, and other similar approaches were at the heart of knowledge management practices
IM4	Market share	• Ooi (2009) • Fugate et al. (2009) • Jennex et al. (2008)	The enhancement of product and service quality; strategy formulation process productivity; innovative ability and activity; competitive capacity and position in the market; communication and knowledge transparency and retention were the major outcomes of knowledge management
IM5	Achievement of strategic objectives		
IM6	Transparency		
IM7	Knowledge re-use	• Cheung et al. (2008)	Knowledge management deal with the effective transfer and reuse of knowledge.
IM8	Collaborative work of virtual teams	• Sarker et al. (2005)	The Knowledge management practice i.e. 'community of practice' in a virtual team provide mechanism for overcoming some of the barriers that exist in virtual teams.
IM9	Decision- making	• Jennex et al. (2008)	KM initiatives improved organization's effectiveness by applying knowledge gained from previous experiences to current and future decision-making activities.
IM10	Production processes	• Jennex et al. (2008)	There were many benefits that can be gained by sharing knowledge throughout the value chain resulting in higher productivity and profit.
IM11	Worker retention	• Harvestonet al. (2005)	Knowledge management program enhanced employee retention rates by recognizing the value of employees' knowledge and rewarding them for it.
IM12	Protection from knowledge loss due to workers' departures	• Bosilj and Jurinjak(2009)	Knowledge management decreased potential loss of competitive edge caused by employees leaving the company.

2.3. Reliability and validity of the instrument

The reliability test was carried out to determine the quality of the measurement items. Internal consistency reliability implies that multiple items measure the same construct, and inter-correlate with one another. The statistics tests showed that Cronbach's alphas of the constructs are 0.70 and .695 indicating satisfactory internal consistency reliability. Relatively high values of reliability implied that the instruments used in this study were adequate. In this analysis, content validity is ensured as the underlying variables were taken from literature and thoroughly reviewed by researchers. Construct validity is the extent to which a set of measured items actually reflect the theoretical latent construct they were designed to measure. Convergent validity and discriminant validity were the two good ways to measure construct validity. Convergent validity is the extent to which items of a specific construct "converge" or share a high proportion of variance in common. To assess convergent validity of the scale, construct loadings, average variance extracted (AVE) and reliability measures were examined (Table 4).

Table 4

Statistics for convergent validity

Label	KM	Item reliability	AVE	Label	IM	Item reliability	AVE
KM1	0.90	0.81	0.68	IM1	0.85	0.72	0.61
KM2	0.81	0.65		IM2	0.77	0.60	
KM3	0.78	0.60		IM3	0.85	0.72	
KM4	0.78	0.60		IM4	0.69	0.48	
KM5	0.83	0.70		IM5	0.65	0.42	
KM6	0.86	0.74		IM6	0.87	0.76	
KM7	0.75	0.56		IM7	0.87	0.76	
KM8	0.91	0.83		IM8	0.66	0.43	
KM9	0.80	0.64		IM9	0.72	0.52	
KM10	0.90	0.81		IM10	0.74	0.55	
KM11	0.92	0.85		IM11	0.79	0.62	
KM12	0.62	0.39		IM12	0.86	0.74	

2.4. Exploratory factor analysis of the (IM) construct

The measurement items of the construct 'Imperatives of KM Practices' were analyzed using exploratory factor analysis. The analysis was performed with the selected items using principal component analysis. The latent Root Criterion (i.e. Eigen value >1) were used for the number of factors to be extracted. An eigen value of 1.00 is the most commonly used criterion for deciding how many factors to retain in factor reduction. The percentage of variance has been used as an indicator to find out how well the total factor solution accounts for what the variables represent collectively. The concept of eigen value translates approximately to the 'variance

explained' of regression analysis. The higher the eigen value of a factor, the higher is the amount of variance explained by the factor.

The Kaiser-Meyer-Olkin measure of sampling adequacy was done before the factor analysis for comparing the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients. The large value of KMO measure indicated that a factor analysis of the variables was a good idea. KMO and Bartlett's tests showed value of 0.761 at significance level of 0.000. This depicted that the degree of common variance among the variables was quite high; therefore factor analysis could be conducted.

The factor analysis was applied on 12 statements resulting into 3 factors. Three factors were having eigen values more than one. The percentages of variance extracted by factor 1 to 3 were 34.714, 13.639 and 9.234 respectively. The cumulative percentage of variance accounted for 57.58% of the total variations extracting from 3 factors. The three extracted factors had been allotted appropriate name on the basis of the underlying items. The names of the factors and factor loadings have been summarized in Table 5.

Table 5

Naming of factors and factor loadings

Factor No	Factor	Label	Factor Loadings	Eigen Value	% of variance
F_1	Competitiveness	IM1	0.854	4.166	34.714
		IM2	0.728		
		IM4	0.703		
		IM5	0.634		
		IM6	0.682		
		IM8	0.68		
		IM9	0.779		
F_2	Organizational performance	IM3	0.616	1.637	13.639
		IM7	0.715		
		IM10	0.688		
F_3	Employee retention rate	IM11	0.555	1.108	9.234
		IM12	0.493		

Source: Field investigation (SPSS 16.0).

Factor I (Competiveness) included seven variables i.e. improved competitive advantage; improved capture and use of knowledge from sources outside the organization; increased market share; better achievement of strategic objectives, improved transparency, ease collaborative work of virtual teams and better decisions, explaining 34.714% of the total variance.

Factor II (Organizational performance) explained 13.64% of the total variance. The variables like improved sharing of knowledge with employees, clients, customers; increase in knowledge reuse and improved production processes was loaded on Factor II.

Factor III (Employee retention rate) included improved worker retention and involvement and protection from loss of knowledge due to workers' departures and explained 9.234% of the total variance.

3. Findings

To study the imperatives of knowledge management practices in selected SMEs, descriptive statistics were applied as discussed in following sections.

Table 6

Imperatives of knowledge management practices on selected SMEs

Factor	Label	Industry	Strongly disagree (Nos.)(%)	Disagree (Nos.) (%)	Uncertain (Nos.) (%)	Agree (Nos.) (%)	Strongly Agree (Nos.)(%)
F_1: Competitive-ness	IM1	Software	-	-	7(8.75)	29(36.25)	44(55)
		Pharmaceutical	-	9(11.25)	34(42.5)	22(27.5)	15(18.75)
		Textiles	5(5.6)	14(15.6)	37(41.1)	26(28.9)	8(8.9)
	IM2	Software	-	-	12(15)	36(45)	32(40)
		Pharmaceutical	-	6(7.5)	30(37.5)	28(35)	16(20)
		Textiles	4(4.4)	15(16.7)	30(33.3)	35(38.9)	6(67)
	IM4	Software	-	5(6.25)	11(13.75)	33(41.25)	31(38.75)
		Pharmaceutical	1(1.25)	8(10)	34(42.5)	27(33.75)	10(12.5)
		Textiles	2(2.2)	15(16.7)	32(35.6)	30(33.3)	11(12.2)
	IM5	Software	-	1(1.25)	7(8.75)	42(52.5)	30(37.5)
		Pharmaceutical	-	9(11.25)	48(60)	18(22.5)	5(6.25)
		Textiles	1(1.1)	10(11.1)	39(43.3)	33(36.7)	7(7.8)
	IM6	Software	9(11.25)	23(28.75)	17(21.25)	13(16.25)	18(22.5)
		Pharmaceutical	-	-	22(27.5)	28(35)	30(37.5)
		Textiles	4(4.4)	12(13.3)	30(33.3)	36(40)	-
	IM8	Software	-	-	7(8.75)	29(36.25)	44(55)
		Pharmaceutical	8(10)	25(31.25)	20(25)	12(15)	15(18.75)
		Textiles	5(5.56)	14(15.6)	36(40)	26(28.9)	9(10)
	IM9	Software	-	-	7(8.75)	29(36.25)	44(55)
		Pharmaceutical	-	3(3.75)	49(61.25)	19(23.75)	9(11.25)
		Textiles	4(4.4)	17(18.9)	39(43.3)	23(25.6)	7(7.8)
F_2: Organizational performance	IM3	Software	11(13.75)	31(38.75)	15(18.75)	7(8.75)	16(20)
		Pharmaceutical	-	12(15)	40(50)	21(26.25)	7(8.75)
		Textiles	4(4.4)	18(20)	47(52.2)	15(16.7)	6(6.7)
	IM7	Software	12(15)	30(37.5)	22(27.5)	9(11.25)	7(8.75)
		Pharmaceutical	-	-	22(27.5)	28(35)	30(37.5)
		Textiles	1(1.1)	15(16.7)	35(38.9)	29(32.2)	10(11.1)
	IM10	Software	-	6(7.5)	32(40)	17(21.25)	25(31.25)
		Pharmaceutical	-	2(2.5)	22(27.5)	28(35)	28(35)
		Textiles	2(2.2)	10(11.1)	29(32.2)	30(33.3)	19(21.1)
F_3: Employee retention rate	IM11	Software	-	1(1.25)	26(32.5)	34(42.5)	19(23.75)
		Pharmaceutical	-	4(5)	57(71.25)	18(22.5)	1(1.25)
		Textiles	-	9(10)	60(66.7)	20(22.2)	1(1.1)
	IM12	Software	-	9(11.25)	20(25)	24(30)	27(33.75)
		Pharmaceutical	-	8(10)	19(23.75)	28(35)	25(31.25)
		Textiles	1(1.1)	14(15.6)	33(36.7)	30(33.3)	12(13.3)

3.1. Software SMEs

The respondents revealed that improved competitive advantage and the desire to ease collaborative work of virtual teams (91%) were the leading goals of knowledge management practices in software SMEs. The better achievement of strategic objectives (90%) of the enterprise was considered as the next important outcome of knowledge management practices. These practices allowed users to better capture and use knowledge as part of coordinated processes (85%) and helped to increase the market share (80%) of the organization. They also supported improvement in decision-making (76%) and production processes (53%).

Knowledge management practices provided ways to improve worker retention (66%) in the organization and protected the loss of knowledge due to workers' departures (64%). Only 39% reported increase in transparency and 20% reported increase in knowledge reuse after applying the knowledge management practices.

3.2. Pharmaceutical SMEs

The respondents (72.5%) revealed that increased knowledge reuse and transparency were the leading goals of knowledge management programs in pharmaceutical SMEs. 70% of the respondents related the implementation of knowledge management practices with improved production processes. More than half of the respondents (55%) agreed that knowledge management allowed them to capture, and use knowledge as part of coordinated processes and further led to improved competitive advantage and market share (46.25%).

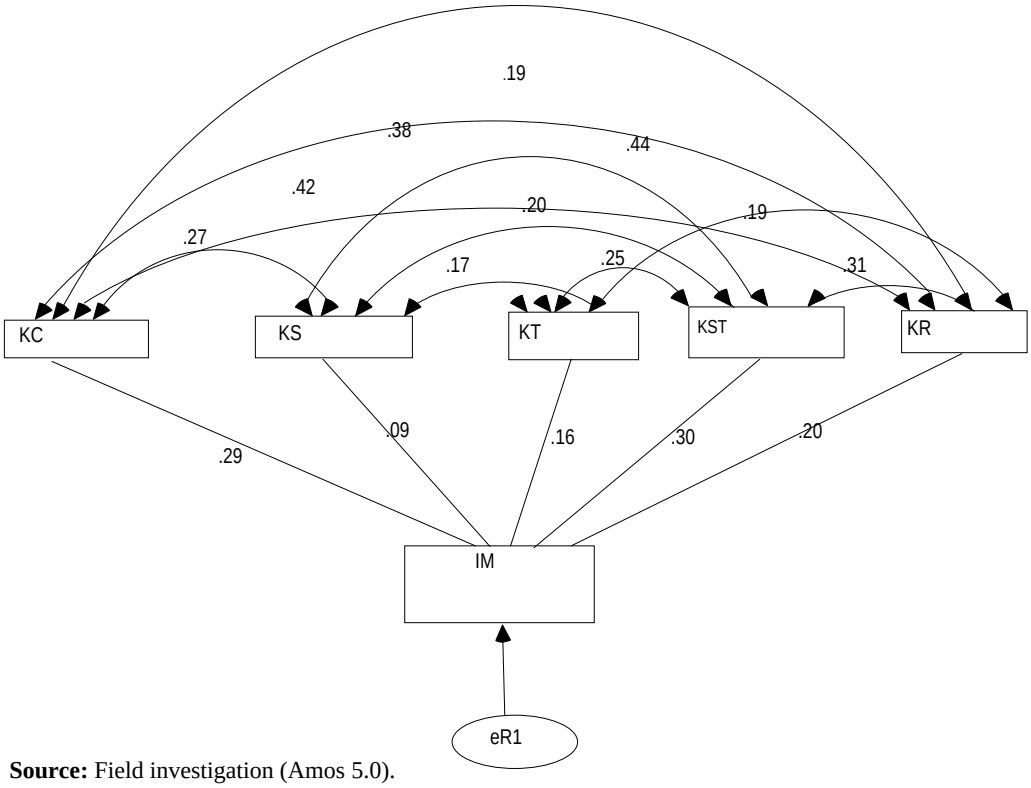
However, only 35% of the respondents felt that knowledge management practices support decision-making and sharing of knowledge with clients/customers. Furthermore, nearly 30% agreed that knowledge management eased the collaboration of virtual teams and helped to achieve strategic objectives of the enterprise. And 66% respondents said that knowledge management practices safeguarded the loss of knowledge due to departure of employees by documenting their knowledge, but only 23.75% agreed with the statement that it helped in worker retention and involvement.

3.3. Textiles SMEs

54.4% respondents found that knowledge management practices made available and accessible the right knowledge, the best tools and resources that improve the production processes. Nearly 46% of the respondents agreed that knowledge management practices added value to the textiles SMEs by improving capture and use of knowledge from sources outside organization, increasing market share, achievement of strategic objectives and protection from knowledge loss due to workers' departures.

4. Model development for knowledge management process and imperatives

The path model was developed to determine the effect of five processes i.e. knowledge capturing (KC), knowledge sharing (KS), knowledge transfer (KT), knowledge storing (KST) and knowledge reuse (KR) on organization which is divided into 3 factors (Table 6) (IM). The single-headed arrows represented linear dependencies. The arrow leading from knowledge capturing to imperative and innovation indicated that imperatives scores depend, in part, on knowledge capturing process and so on. The variable error was enclosed in a circle because it was not directly observed. Error (ER1) represented much more than random fluctuations in imperative scores due to measurement error. The double-headed arrows in the path diagram connected the five processes that might be correlated with each other. The model had 27 parameters to be estimated and 28 sample moments. This left degrees of freedom to be equal to 1 (Table 8). Figure 1 represented the path diagram of Model 1.



Source: Field investigation (Amos 5.0).

Figure 1. **Path Diagram for Model 1**

4.1. Path Loadings of the Model

In the structural model, path loading represents the predictive links among constructs. It shows significance relationship fit between variables and its indicators. These path loading of the models and the probability level were summarized in Table 7.

Table 7

Path Loading and Probability Level of the Models

Model	Path	Path loading	Probability level
1	IM←KC	.290	***
	IM←KS	.087	.088
	IM←KT	.165	.001
	IM←KST	.301	***
	IM←KR	.200	.014

The results of the Table 7 revealed that the most of the paths were significant at 0.01 and 0.05 significant levels. In the model, the highest value of path loading was for knowledge storing on organization (IM = 0.301) which meant that the relevant and timely storage of knowledge led to increased organizational performance, competitiveness and employee retention rate of the organization.

4.2. Overall Model Fit

The last step involved was to test the model fit. Overall goodness-of-fit was accessed to assure that the model was correctly specified. Model fit determines the degree to which the sample data fit the SEM model. Model fit criteria commonly used are chi square, Root Mean Square Error of Approximation (RMSEA), Root Mean Residual (RMR), the goodness-of fit index(GFI), the adjusted goodness-of –fit index(AGFI), Comparative Fit Index (CFI) , Nor med fit index(NFI), Incremental fit index(IFI) and Tucker-fir-index(TFI).

The chi square test was considered an absolute test of model fit. If the probability was below 0.05, the model was accepted. The other measures of fit are descriptive. The recommended value of RMSEA was less than or equal to .08. The smaller the value of RMSR, the better the fit was. GFI varies from 0 to 1 and value greater than .90 indicates a good fit. AGFI was a variant of GFI which uses mean squares instead of total sums of squares in the numerator and denominator of 1. The AGFI varies from 0 to 1 NFI values vary from 0 to 1, with 1 equal to perfect fit. CFI close to 1 indicates a very good fit and values above .90 are considered to be an acceptable fit. Goodness of fit measures and their acceptable levels for structural equation modelling are provided in Table 8.

Table 8

Goodness-of-fit measure for structural equation modelling

Goodness- of- fit measure	Model 1			Level of accepted fit
	S	P	T	
Degree of freedom	1			
P-level (probability level)	.041	.036	.048	Below 0.05
Chi square	3.504	2.218	.028	
GFI	.988	.992	1.00	>.90
AGFI	.657	.780	.998	>.90
CFI	.991	.986	1.00	>.90
NFI	.988	.980	1.00	>.90

Source: Field investigation (Amos 5.0).

*S, P, T stands for Software. Pharmaceutical and Textiles industry respectively.

The overall model fit was calculated for all the three industries. Goodness of fit (GFI) of the Model1, Model2 and Model3 in all the industries was above acceptable value. The other model fit measures were within the acceptable level.

5. Conclusions

The objective of the study sought to investigate the imperatives of the knowledge management practices. The twelve items were framed to measure the effect of knowledge management. The twelve selected imperatives were factor analyzed using principal component analysis which resulted into three factors i.e. competitiveness, organizational performance and employee retention rate. These three factors were further analyzed using descriptive values and a structural equation model.

The results from the software SMEs confirmed that knowledge management deals with the effective transfer, sharing and reuse of knowledge with employees, customers, markets, competitors and experts and it was one of the facilitator of organizational growth. Knowledge management practices allowed SMEs to store, analyze, interpret and share knowledge as part of their daily business processes. They revealed that improved competitive advantage and ease collaborative work of virtual teams were the leading goals of knowledge management practices in software SMEs. The better achievement of strategic objectives of the enterprise was also considered an important outcome of these practices. Knowledge management practices allowed users to better capture and use knowledge as part of coordinated processes and helped to increase the market share of the organization. Knowledge management practices support improvement in decision-making and production processes and also contributed in identifying the real contributors and capturing their knowledge and thereby reduced the organization costs which occurred due to resignation, retirement, transfer of employees and prevent the knowledge loss and increases worker retention. The organizations adopted these practices with the expectation to achieve improvement in the organizational performance, competiveness, innovation and to deepen and enrich the knowledge pool.

In pharmaceutical SMEs, the increase in knowledge reuse and transparency were the leading goals of knowledge management programs. Pharmaceutical SMEs implemented the knowledge management solutions to allow employees to store, analyze, interpret and share knowledge as part of business processes and to improve competitive advantage and market share. Knowledge management practices helped in managing the knowledge assets of the Pharmaceutical companies comprising the combination of knowledge and experience in the details of the whole drug discovery, development and distribution. These practices leveraged the intellectual assets, enhanced the selling capabilities, strengthened customer relationships, and provided competitive intelligence by improving the drug R&D cycle. These practices safeguarded the loss of knowledge due to departure of employees by documenting their knowledge and indirectly affected the competitiveness, organizational performance and employee retention rate. However, in Pharmaceutical SMEs, knowledge management practices did not support sharing of knowledge with clients/customers. Furthermore, few SMEs believed that knowledge management eased the collaboration of virtual teams and helped to achieve the strategic objectives of the enterprise.

In textiles SMEs, knowledge management practices made available and accessible the right knowledge, the best tools and resources that improved the production processes. Knowledge management practices added value to the textiles SMEs by improving capture and use of knowledge from sources outside organization, increasing market share, achievement of strategic objectives and protection from knowledge loss due to workers' departures. Less than half of the textiles enterprises linked the knowledge management with increased competitive advantage, improvement in decision making, improved transparency, knowledge re-use and eased collaborative work of virtual teams.

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About the author

Ritika SAINI earned her PhD in knowledge management at Panjab University, Chandigarh in 2012. She is currently working as Assistant Professor in DAV College, Chandigarh. Her main research interests comprise research methodology, knowledge management and information technology. She has written 20 research papers in national and international journals.