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NATURE OF KNOWLEDGE TECHNOLOGY ACROSS INDIAN ORGANIZATIONS

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PURPOSE

THE primary purpose of this paper is to investigate the nature and prevalence of Knowledge Technology in knowledge organizations and how Knowledge Technology varies across six knowledge organizations on sectoral lines and two genders of knowledge workers from the sample of 204 employees.

Design/Methodology/Approach: *A questionnaire, containing basic demographic variables and Knowledge Technology items has been provided to respondents i.e., to workers and managers spread across various functional groups, managerial levels from six selected knowledge organizations operating in different sectors of the Indian economy. A total of 204 fully-filled questionnaires have been received both personally and through emails and digital forms. The collected data was statistically treated, using SPSS, with the technique of Principal Component Analysis to figure out the relative importance of items in the Knowledge Technology variable and its unitary nature. Multiple Regression Equation with dummy variables is used to decipher the distribution of Knowledge Technology across six Knowledge Organizations. The difference of perception regarding Knowledge Technology across both genders was assessed using Multiple Regression Equation with dummy variables.*

Findings: *Knowledge Technology is found out to be a unitary variable shown in one Principal Component encompassing 5 technological items having dimensions such as ability to cater to user idiosyncrasies, contextuality of available knowledge, and intimate connectivity between knowledge and user. The sectoral differences were found and it was evident that the organizations belonging to IT sector are far ahead in having Knowledge Technology in their organizations. No significant gender differences were found between the perception of male and female knowledge workers regarding their perception of Knowledge Technology in their respective organizations.*

Research Limitations: *This study was conducted in only six knowledge organizations located in India with a sample of 204 knowledge workers. Hence, its generalizability is limited to other similar contexts. The limitations of the questionnaire survey technique are also applicable.*

Practical Implications: *This paper points out that the Knowledge Technology is the unitary variable and the main focus of the Knowledge Technology should be on the accessibility of data, information, and network to individual user or knowledge worker per se. Even though the organizations operate in different sectors of the economy, efforts should be made such that all the other Indian organizations which are not operating in IT sector, can also benefit from proper deployment of the Knowledge*

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Technology focussing on individual knowledge worker's needs and requirements being fulfilled at the right time and at the right place for effective knowledge management.

Originality/Value: *There are very few research studies which focus mainly on the technological dimension in the Indian organizations. This empirical research paper tries to fill this gap. This empirical study is all about the Knowledge Technology in Indian organizations and its distribution across gender and sectoral dimensions of the economy.*

Key Words: *Knowledge Technology, Knowledge Organization, Knowledge Worker, ICT, IT.*

Knowledge Technology

The traditional factors of production (Capital, Land, and Labor) have given way to the knowledge itself as the main factor of production. Unlike traditional factors of production, knowledge provides increasing rate of return on initial incorporation of knowledge into production process, which returns into finer and useful knowledge. Thus, knowledge gets compounded. It requires more efficient and effective management of knowledge. Milton, Shadbolt, Cottam, & Hammersley (1999) identified that "the essence of knowledge management is to find strategies to provide the right knowledge to the right people, at the right time, and in the right format" (p. 615), and pointed out that technology can help in overcoming the problems of knowledge management.

There are various Indian research studies on knowledge (Tomblin & Maheshwari, 2004), Leadership (Singh & Kumar, 2013), Organizational Culture (Kumar, 2012), Technology (Kumar, 2012), knowledge management (Singh, 2001; Grover & Banerjee, 2005; Sharma, 2005; Sharma, 2008; Singh & Sharma, 2008a; Singh & Sharma, 2008b; Singh & Sharma, 2008c; Singh & Sharma, 2008d; Kumar, 2014) per se and the factors affecting knowledge management, for example, technology (Kumar, 2012), Organizational Culture (Sharma, 2005; Singh & Sharma, 2011a; Singh & Sharma, 2011b; Kumar, 2014), leadership (Kumar, 2013), knowledge manager (Dutt, 2006), and how knowledge management results into higher employees satisfaction (Singh & Sharma, 2011b).

The technology can be used most effectively and efficiently in the different dimensions and stages of knowledge management process viz., knowledge codification and knowledge repository of structured, explicit knowledge — usually in document form (Davenport & Prusak, 1998), and easier knowledge transfer of codified forms of knowledge between different groups (Newell, Robertson, Scarbrough, & Swan, 2002). Sher & Lee (2004) argued that information technology helps in managing the knowledge, which significantly enhances dynamic capabilities.

However, the technology is not indispensable to all the dimensions and stages of Knowledge management process and knowledge types but technology is an indispensable component in the entire spectrum of Knowledge Management (Kumar, 2012). Milton et al. (1999) suggested that the technology is an important facilitator. Technology and Knowledge Management shares a bi-directional relationship which can be proven by observing the role played by technology in knowledge management processes e.g., ICT forms the uniform thread behind all knowledge management dimensions. Same way knowledge management is instrumental in development of new technologies or technological revolutions. Newer technologies or technological revolutions come on the heap of older technology (Kumar, 2012). Even though, in the beginning, ICT revolution brought about knowledge management within the reach of general organizations. Liao (2003) argued that the Information and Communication Technology (ICT) plays an important role in knowledge management. Tseng (2008, p. 150) pointed out that "the development of IT is the major force for change in the Knowledge Management System (KMS)."

Sher & Lee (2004) argued that the IT is an indispensible enabler of knowledge management. Tseng (2008, p. 151) argued that "IT is a tool which is able to manage, store, and transmit structural knowledge.

In the process of knowledge management, the absorption, creation, arrangement, storage, transfer, and diffusion of knowledge are all dependent on assistance provided by IT." Bolisani & Scarso (1999) argued that "different ICT systems, which are designed to handle different kinds of information and data, are appropriate for transfer of different kinds of knowledge" (p. 209). However, different ICT systems may be very confusing for the novice users. A different kind of technology needs to be deployed to support knowledge management. Milton et al. (1999) argued that "new methods and tools are needed that can supplement existing technologies, as most current software tools have more to do with new ways of storing and communicating information than actual ways in which people create, acquire and use knowledge" (p. 616). Such new methods and tools could act as a bridge between people and current technologies. Merlyn & Valikangas (1998) prescribed Knowledge Technology (KT) over traditional ICT for knowledge management. Milton et al. (1999) distinguished between information technology and Knowledge Technology, stating that through the medium of Knowledge Technology knowledge is created, acquired, and used by people in an organization. Merlyn & Valikangas (1998) pointed out that the famous productivity paradox is applicable in the case of information technology- diminishing returns to the investment in the information technology, and argued for investment in Knowledge Technology that offers increasing returns. Milton et al. (1999) defined Knowledge Technology, in most simple ways, as the technologies and tools oriented towards knowledge. Milton et al. (1999, p. 638) suggested that "for organizations, the main purpose of Knowledge Technology is to provide solutions to certain key problems associated with knowledge management such as knowledge capture and dissemination, dealing with tacit knowledge, and knowledge communication." Milton et al. (1999) suggested that Knowledge Technology can be very useful in the five key knowledge management activities, viz., personalization, codification, discovery, creation/ innovation and capture/monitor.

According to Kuhn & Abecker (1997), the basic requisitions which contribute to the success of Knowledge Management are ignored by the computer scientists while dealing with the use of Information and Communication Technology (ICT) but, as per Dieng, Corby, Giboin, & Ribiere (1999), for successful knowledge management, "a corporate memory should provide the right knowledge or information to the right person at the right time and at the right place" (p. 568). This could only be possible through the Knowledge Technology.

Theoritical Background

Merlyn & Valikangas (1998) discussed some of the aspects of KT in terms of user idiosyncrasy, contextuality of Knowledge, and intimate connectivity between knowledge and user.

User Idiosyncrasy

Merlyn & Valikangas (1998) argued that the sophisticated Knowledge Technology needs to "build on an understanding of individual user idiosyncrasy for his knowledge work" (p. 34). There are some technologies that try to incorporate individual user idiosyncrasies on a very large scale, e.g., Apple records the voice data of the individual users for effective voice recognition and use of SIRI. The Knowledge Technology tries to fulfill the needs and requirements of the individual user, the way he wants it. Milton et al. (1999) pointed out that Knowledge Technology must "be capable of wide use throughout the organization including usage by the relatively novice users" (p. 639). Thomas (1996) argued that successful information system development should focus on the needs of the users. The needs of the users are basically "human issues of the development" (Dieng et al., 1999). Historically, it is the human issues which "make or break, new methods and tools at work" (Shum, 1997). The detection of the "right" users' needs, is the first task for the system designers (Dieng et al., 1999). Merlyn & Valikangas (1998) argued for a shift towards Knowledge Technology by meeting the users' needs in knowledge work.

Guns & Valikangas (1997, p. 288) pointed out that "the knowledge is something idiosyncratic to a person in two ways, one, personality differences among individual users (as personality plays a critical role in the way that people acquire, perceive, value, and use knowledge)", and second, differences in the world view of the individual. Guns & Valikangas (1997) also argued for creation of knowledge profile of different knowledge users i.e., subjectivity of knowledge. The understanding of the individual user is very important viz., "knowledge sharing will be more effective when the ways in which individuals make sense of it or apply it" (Guns & Valikangas, 1997, p. 288). This gives ways to the second aspect of Knowledge Technology i.e., contexuality of knowledge.

Contextuality of Knowledge

Merlyn & Valikangas (1998) pointed out that making sense of the context is perhaps the biggest challenge to Knowledge Technology and suggested that "digitization of knowledge should take place in a way that preserves as much the context as possible, be it in the form of stories, pictures or footnotes" (p. 34). Guns & Valikangas (1997) pointed out that the knowledge managers are sensitive to the issues of content packaging and context. Merlyn & Valikangas (1998) argue that "KT needs to address following issues related to the characteristics of knowledge itself for knowledge management viz., change in knowledge itself during the process of transfer, internalized nature of knowledge thus, being embedded in context, living nature of knowledge so, knowledge needs to be continuously created and recreated to be relevant, impact of corporate incentive system on the knowledge sharing and its management, and idiosyncratic nature of users' needs and requirements of knowledge and thus their personal approach towards knowledge itself" (p. 29). Thomas (1999) also pointed out that the knowledge management Systems could only be successful by a clear focus on the situation of the use of the particular knowledge. Guns & Valikangas (1997) argued about some aspects of packaging while communicating the knowledge viz., "contextual positioning, amount of detail, textual vs. graphical presentation, source authority vs. source diversity, and choice of media" (p. 291). While packaging the knowledge, both the users' idiosyncratic choices and contextuality of knowledge should be taken into consideration. Both are interrelated and interdependent.

Connectivity between Knowledge and the Users

If there is no connection between knowledge and the users, the knowledge management cannot take place in the modern organization. But, in most of the cases, it is not binary, i.e., there is either connection or no connection between knowledge and the users. The connectivity remains in-between these two extremes and there are umpteen ways to connect knowledge and the users. For e.g., Merlyn & Valikangas (1998) argued that "the connectivity between knowledge and its users can be made by human's avatars (which permits more direct communication in which the human can more quickly access the knowledge the avatar represents) and knowledge categorization systems which help users to draw connections between different pieces of knowledge, illustrate relationships between concepts, and communicate knowledge in different ways that appear valuable" (p. 34). However, the problems related to co-integration between the knowledge assets and knowledge management supporting IT based systems should be addressed (Merali, 1997).

Hypotheses

Since, Merlyn & Valikangas (1998) pointed out three aspects of the same Knowledge Technology, it also means that there would be one Knowledge Technology having three aspects being perceived by the user on the basis of which the following hypotheses have been framed:

$H_0$1: There is no unitary variable that could be named Knowledge Technology encompassing all the three aspects of technology viz., user idiosyncrasy, contextuality of knowledge, and intimate connectivity between knowledge and users.

H_a1: The Knowledge Technology is a unitary variable encompassing all the three aspects of it viz., user idiosyncrasy, contextuality of Knowledge, and intimate connectivity between knowledge and users.

$H_0$2: There is no difference in the availability of Knowledge Technology in Organizations belonging to different sectors.

H_a2: The availability of Knowledge Technology is different in Organizations belonging to different sectors.

$H_0$3: There is no gender difference regarding the perception about Knowledge Technology.

H_a3: Different genders of Knowledge Workers perceive Knowledge Technology differently.

H_a2- The availability of Knowledge Technology is different in organizations belonging to different sectors.

H_a3- Different genders of knowledge workers perceive knowledge differently.

Research question: The basic questions that the paper tries to answer are:

1. Whether Knowledge Technology is a unitary variable which encompasses all the three aspect of it viz., user idiosyncrasy, contextuality of knowledge, and intimate connectivity between knowledge and user

2. What is the nature of Knowledge Technology and its gender and sectoral distribution among six Indian knowledge organizations?

Research Model

The paper incorporates a non-experimental research design and depicts exploratory and descriptive characteristics. Primary data has been collected through questionnaire which has been framed in consideration to the research objectives and hypotheses of the study.

Sample

A sample of 204 employees, from the 6 different knowledge organizations operating in India, has been collected with following distribution in the table no. 1. Two dummy variables named "dum. var. sec. 1" and "dum. var. sec. 2" have been created for calculation of sectoral differences. The variable called "dum. var. sec. 1" depicts the organizations from IT sector and the variable called "dum. var. sec. 2" depicts the organizations from infrastructure sector except power. The base organizations operate in power sector.

Table No. 1: Dummy Variables for Sector-wise Distribution of Organizations

Type of Organization	Dum.var. sec. 1- IT sector	Dum.var. sec. 2- infra. sector except power	No. of responses	Remarks
Organization- A	0	0	100	Base-Power
Organization- B	1	0	38	IT Org.
Organization- C	1	0	30	IT Org.
Organization- D	0	1	25	Infrastructure
Organization- E	0	1	8	Infrastructure
Organization- F	1	0	3	IT Org.
Total	71	33	204	

For calculation of gender differences, a dummy variable named "dumvar gender" was created which has two values of "0" and "1". "0" stands for male and "1" stands for female.

Table No. 2: Dummy Variables for Gender

	Model	Frequency	Percent	Cumulative Percent
Valid	0 - Male	171	83.8	83.8
	1 - Female	33	16.2	100.0
	Total	204	100.0	

Measures

A self-administered questionnaire has been provided to respondents i.e., to workers and managers spread across various functional groups, managerial levels from different selected organizations. The questionnaire, having five items on technology, incorporates user idiosyncrasy, contextuality of knowledge, and intimate connectivity between Knowledge and the user. Here, a model-free and software-independent Knowledge Technology has been assessed by this questionnaire for generalization to other: organizations.

The Principal Component Analysis was applied on the raw score of 5 technology items to figure out whether all the three main aspects of Knowledge Technology can be incorporated into a single variable. Once the Principal Component of Knowledge Technology variable has been calculated using the component matrix, the differences along the sectoral and gender lines can be pointed out using multiple regression equation.

Data Analysis, Results, and Interpretation

Principal Component Analysis: All the five variables taken for capturing the very essence of technology that could be used for knowledge management process have been factor analyzed using the Principal Component Analysis method so that one or two major components could be derived out for data reduction and data compaction. The process of Principal Component Analysis method shown in table no. 3 suggested that only one component could be found out, which itself automatically helped in our endeavor.

Table No. 3: Warnings about Single Principal Components

Only one component was extracted. Component plots cannot be produced.

Table No. 4: Descriptive Statistics

Particulars	Mean	Std. Deviation	Analysis N
Q 1. Learning is facilitated by effective and efficient computer	3.19	0.728	204
Q 2. People have ready access to the information network	3.39	0.621	204
Q 3. We design and tailor our electronic performance support system	2.96	0.748	204
Q 4. People have full access to the data they need to do their job	3.11	0.721	204
Q 5. We can adapt software systems to collect code store create	3.00	0.778	204

None of the variables is missing from the data-matrix. The correlation coefficients (in table no. 5) among all the five variables of "Knowledge Technology" are positive, small, and highly significant (even at 1% level). These questions measure the same underlying dimension or different aspects of the same thing. In this case it's 'Knowledge Technology'. It ranges from 0.289 to 0.533. Smaller and significant correlation coefficients indicate that they are related but overlap on a few aspects. So, correlation coefficient matrix proves that they all belong to "Knowledge Technology" dimension. The higher than the requisite minimum determinant (0.00001) suggests that even though the correlation coefficients are significant, there is no multicolinearity or singularity.

Table no. 7 depicts the result of KMO (Kaiser-Meyer-Olkin) test (value=0.787) which infers that the data is adequate and also negates the requirement of addition or removal of variables from the existing data set. "A value close to 1 indicates that patterns of correlations are relatively compact and so Principal Component Analysis should yield distinct and reliable principal component" (Field, 2000, p. 647). Therefore, it can be interpreted that Principal Component Analysis is appropriate for the data set.

Table no. 5 shows the result of Bartlett's test which "examines whether the population correlation

Table No. 5: Correlation Matrix[a]

	Particulars	Q 1.Learning is facilitated by effective & efficient comp.	Q 2.People have ready access to information network	Q 3. We design and tailor our electronic performance support system	Q 4. People have full access to data they need to do job	Q 5. We can adapt software systems to collect code
Correlation	Q 1. Learning is facilitated by effective & efficient computer	1.000	0.380	0.303	0.298	0.289
	Q 2. People have ready access to information network	0.380	1.000	0.414	0.533	0.381
	Q 3. We design & tailor our electronic performance support system	0.303	0.414	1.000	0.519	0.397
	Q 4. People have full access to data they need to do their job	0.298	0.533	0.519	1.000	0.571
	Q 5. We can adapt software systems to collect code store create	0.289	0.381	0.397	0.571	1.000
Sig. (1-tailed)	Q 1. Learning is facilitated by effective & efficient computer		0.000	0.000	0.000	0.000
	Q 2. People have ready access to information network	0.000		0.000	0.000	0.000
	Q 3. We design & tailor our electronic performance support system	0.000	0.000	0.000	0.000	
	Q 4. People have full access to data they need to do their job	0.000	0.000		0.000	0.000
	Q 5. We can adapt software systems to collect code store	0.000	0.000	0.000		0.000

a. Determinant = 0.270

Table No. 6: Inverse of Correlation Matrix

Particulars	Q 1.Learning is facilitated by effective & efficient comp.	Q 2.People have ready access to the information network	Q 3. We design & tailor our electronic performance support system	Q 4. People have full access to data they need to do job	Q 5. We can adapt software systems to collect code
Q 1. Learning is facilitated by effective & efficient computer	1.225	-0.330	-0.166	-0.016	-0.153
Q 2. People have ready access to information network	-0.330	1.548	-0.213	-0.567	-0.086
Q 3. We design & tailor our electronic performance support system	-0.166	-0.213	1.465	-0.503	-0.166
Q 4. People have full access to data they need to do their job	-0.016	-0.567	-0.503	1.971	-0.706
Q 5. We can adapt software systems to collect code store	-0.153	-0.086	-0.166	-0.706	1.546

Table No. 7: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.787
Bartlett's Test of Sphericity	Approx. Chi-Square	262.653
	Df	10.000
	Sig.	0.000

matrix resembles an identity matrix (i.e., it tests whether the off-diagonal components are zero). For the Principal Component Analysis to work, there should exist some relationship between variables and if the R-matrix were an identity matrix then all correlation coefficients would be zero" (Field, 2000, p. 612). The result of the test signify that the R-matrix is not an identity matrix; which points toward the fact that there is a scope of including the relationship between the variables in the analysis. The result of Bartlett's test show that value of $p<0.001$, therefore, it is highly significant and Principal Component Analysis is appropriate.

To check singularity in the data, the determinant of the R-matrix should be greater than the necessary value of 0.00001. For this data, the value of the determinant is equal to 0.270. Therefore, we can be confident that multicollinearity is not a problem for these data.

The Anti-image correlation and covariance matrices (shown in table no. 8) provide similar information as there is a relationship between covariance and correlation. The KMO values can be calculated for multiple and individual variables. "The KMO values for individual variables are produced on the diagonal of the anti-image correlation matrix.These values make the anti-image correlation matrix an extremely important part of the output. While checking the overall KMO statistic, it is important to examine the diagonal elements of the anti-image correlation matrix. The values should be above 0.5 for all variables" (Field, 2000, p. 660). For these data, all values are well above 0.5 so, none of the variables need to be removed. The off-diagonal elements represent the partial correlations between variables. For a good

Table No. 8: Anti-image Matrices

	Particulars	Q 1.Learning is facilitated by effective & efficient comp.	Q 2.People have ready access to information network	Q 3.We design & tailor our electronic performan-ce support system	Q 4. People have full access to data they need to do job	Q 5. We can adapt software systems to collect code
A'vei-image Covariance	Q 1. Learning is facilitated by effective & efficient computer	0.817	-0.174	-0.092	-0.007	-0.081
	Q 2. People have ready access to the information network	-0.174	0.646	-0.094	-0.186	-0.036
	Q 3. We design & tailor our electronic performance support system	-0.092	-0.094	0.683	-0.174	-0.073
	Q 4. People have full access to the data they need to do their job	-0.007	-0.186	-0.174	0.507	-0.232
	Q 5. We can adapt software systems to collect code store	-0.081	-0.036	-0.073	-0.232	0.647
Anti-image Correlation	Q 1. Learning is facilitated by effective & efficient computer	0.828[a]	-0.240	-0.124	-0.011	-0.111
	Q 2. People have ready access to information network	-0.240	0.800[a]	-0.141	-0.325	-0.056
	Q 3. We design & tailor our electronic performance support system	-0.124	-0.141	0.837[a]	-0.296	-0.110
	Q 4. People have full access to the data they need to do their job	-0.011	-0.325	-0.296	0.731[a]	-0.404
	Q 5. We can adapt software systems to collect code store create	-0.111	-0.056	-0.110	-0.404	0.789[a]
a. Measures of Sampling Adequacy						

Table No. 9: Communalities

Particulars	Initial	Extraction
Q 1. Learning is facilitated by effective & efficient computer	1.000	0.339
Q 2. People have ready access to information network	1.000	0.563
Q 3. We design & tailor our electronic performance support system	1.000	0.532
Q 4. People have full access to the data they need to do their job	1.000	0.685
Q 5. We can adapt software systems to collect code store	1.000	0.539
Extraction Method: Principal Component Analysis.		

Principal Component Analysis, we want these correlations to be very small (Field, 2000). For a check, almost all the off-diagonal elements are small suggesting that the analysis is moving in the right direction.

The communalities before and after extraction are depicted in table no. 9. "Communality is the proportion of common variance within a variable. Principal Component Analysis works on the initial assumption that all variance is common; therefore, before extraction the communalities are all 1. Once factors have been extracted, we have a better idea of how much variance is, in reality, common. The communalities in the column labeled Extraction reflect this common variance" (Field, 2000, p. 661). We can say that 33.9% of the variance associated with question 1 (Q1- Learning is facilitated by effective and efficient computer based information system) is common, or shared variance. "Another way to look at these communalities is in terms of the proportion of variance explained by the underlying factors. Before extraction, there are as many factors as there are variables, so all variance is explained by the factors and communalities are all 1. However, after extraction some of the factors are discarded and so some information is lost. The retained factors cannot explain all of the variance present in the data, but they can explain some. The amount of variance in each variable that can be explained by the retained factors is represented by the communalities after extraction" (Field & Miles, 2010, p. 568).

Principal Component Extraction: The SPSS uses Kaiser's criterion of retaining factors with Eigen values greater than 1. In the output table no. 10, the Eigen values associated with each linear component (Principal Component) before extraction and after extraction are shown. Since there is only one component that could be extracted as per Kaiser's criteria, there is no rotation value of component. SPSS then extracts all factors with Eigen values greater than 1, which leaves us with only one factor.

Table No. 10: Total Variance Explained

Component	**Initial Eigen Values**			**Extraction Sums of Squared Loadings**		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	2.657	53.139	53.139	2.657	53.139	53.139
2.	0.793	15.869	69.008			
3.	0.610	12.195	81.204			
4.	0.574	11.488	92.692			
5.	0.365	7.308	100.000			
Extraction Method: Principal Component Analysis.						

Table No. 11: Component Matrix[a]

Particulars	**Component** 1
Q 1. Learning is facilitated by effective & efficient computer	0.582
Q 2. People have ready access to the information network	0.750
Q 3. We design & tailor our electronic performance support system	0.729
Q 4. People have full access to the data they need to do their job	0.827
Q 5. We can adapt software systems to collect code store create	0.734
Extraction Method: Principal Component Analysis a. 1 components extracted	

The Eigen values associated with this factor are displayed (and the percentage of variance explained) in the columns labeled Extraction Sums of Squared Loadings. The values in this part for the table are same as the values before extraction, except that the values for the discarded factors are ignored.

Principal component -1 which could be referred as "Knowledge Technology" for later analysis has the Eigen value of 2.657.

The matrix which is given in table no. 12 contains the correlation coefficients between all of the questions or items based on factor model. In order to evaluate the goodness of fit of the model, the observed correlation coefficients are compared with the correlation coefficients predicted from the model and their difference is calculated. The smaller is the value of such difference, better it is for the model. The Residual matrix depicts such values in the lower half section. The diagonal of Reproduced correlation matrix contains the communalities after extraction for each variable.

Table No. 12: Reproduced Correlations

	Particulars	Q 1.Learning is facilitated by effective & efficient comp.	Q 2.People have ready access to information network	Q 3.We design & tailor our electronic performance support system	Q 4. People have full access to data they need to do job	Q 5. We can adapt software systems to collect code
Reproduced Correlation	Q 1. Learning is facilitated by effective & efficient computer	0.339[a]	0.437	0.425	0.482	0.427
	Q 2. People have ready access to the information network	0.437	0.563[a]	0.547	0.621	0.551
	Q 3. We design & tailor our electronic performance support sytem	0.425	0.547	0.532[a]	0.603	0.535
	Q 4. People have full access to the data they need to do their job	0.482	0.621	0.603	0.685[a]	0.607
	Q 5. We can adapt software systems to collect code store create	0.427	0.551	0.535	0.607	0.539[a]
Residual[b]	Q 1. Learning is facilitated by effective & efficient computer		-0.057	-0.121	-0.184	-0.139
	Q 2. People have ready access to the information network	-0.057		-0.133	-0.088	-0.170
	Q 3. We design & tailor our electronic performance support system	-0.121	-0.133		-0.084	-0.138
	Q 4. People have full access to the data they need to do their job	-0.184	-0.088	-0.084		-0.036
	Q 5. We can adapt software systems to collect code store create	-0.139	-0.170	-0.138	-0.036	

a. Reproduced communalities

b. Residuals are computed between observed and reproduced correlations. There are 9 (90.0%) nonredundant residuals with absolute values greater than 0.05.

The content of questions that load onto the same factor/component refers to some common theme. If the mathematical factor produced by the analysis represents some real-world construct then common themes among highly loading questions can help us identify what the construct might be. In this case, as we know beforehand too, that it belongs to "Knowledge Technology" aspect of the organization.

The first and only Principal Component has been recorded and fed as factor score into the original dataset. This variable has been named and labeled as "Knowledge Technology" which has following main questions or items and their respective component score given in table no. 13 that has been incorporated into "Knowledge Technology" to be part of further analysis. These items or questions have the common theme of "Knowledge Technology".

As per table no. 13, we can move further and add that the Principal Component "Knowledge Technology", derived from the five technology items as above, have different emphaisis on each of the items. These items are not equally weighted to form the variable "Knowledge Technology", rather knwoledge workers prefer accessibility to complete data and ready network, which lead to 'intimate connectivity between knowledge and user'. 'The contextuality of knowledge' is the second preference where knowledge workers can adapt software systems to collect, code, store, create and transfer information in ways best suited to meet their needs. Lastly, knowledge workers like to design and tailor their electronic performance support systems to meet their learning needs and knowledge workers proclaim that learning is facilitated by effective and efficient computer based information system. These two items form part of fulfillment of 'user idiosyncrasies' need of the knowledge workers.

Table No. 13: Component Score Coefficient Matrix

Particulars	Component
	1
Q 1. Learning is facilitated by effective & efficient computer	0.219
Q 2. People have ready access to the information network	0.282
Q 3. We design and tailor our electronic performance support system	0.274
Q 4. People have full access to data they need to do their job	0.311
Q 5. We can adapt software systems to collect code store create	0.276
Extraction Method: Principal Component Analysis. Rotation Method: Oblimin with Kaiser Normalization. Component Scores.	

Multiple Regression Equation: The dummy variables were introduced in the multiple regression analysis to find out any sectoral difference among the organizations belonging to different sectors and gender differences.

The t values of "dum. var. sec. 1" (shown in table no. 14) is significant at 5% level of significance. This suggests that, organizations belonging to IT sector are significantly different from the organizations in the power sector in the area of Knowledge Technology, having dimensions of catering to user idiosyncrasies, contextuality of available Knowledge, and intimate connectivity between knowledge and user. The positive t-value of the "dum. var. sec. 1" can be interpreted as the knowledge worker working in the IT sector feel that their Knowledge Technology is not only significantly different but they are better than the Knowledge Technology available in the power sector with respect to catering user idiosyncrasies, contextuality of available Knowledge, and intimate connectivity between knowledge and user.

The t values of "dum. var. sec. 2" (shown in table no. 14) is not significant even at 10% level of significance. This suggests that organizations belonging to 'infrastructure sector other than power sector' are not significantly different from the organizations in the power sector in the area of Knowledge Technology. Although, the negative t value of "dum. var. sec. 2" referring to organizations belonging to 'infrastructure sector other than power sector' are not significantly different in the area of Knowledge Technology but may be poor in terms of available technology catering to knowledge worker's idiosyncrasies, contextuality

Table No. 14: Coefficients of Dummy Variable for Sectoral Differences

Model	Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.	95% Confidence Interval for B	
	B		Beta			Lower Bound	Upper Bound
1 (Constant)	-0.105	0.098		-1.068	0.287	-0.299	0.089
Dum.. Var. sec. 1	0.378	0.153	0.181	2.481	0.014	0.078	0.679
Dum. Var. sec. 2	-0.166	0.197	-0.061	-0.839	0.402	-0.555	0.223
a Dependent Variable: Knowledge Technology							

of knowledge, and connectivity between knowledge and user. However, the ambiguous sign of t values of “dum. var. sec. 2” in the 95% confidence level of B, suggests that organizations belonging to ‘infrastructure sector other than power sector’ are more or less similar to the Organizations belonging to the power sector in the area of Knowledge Technology.

Similarly, the t value of “dum. var. gender” (shown in table no. 15), which stands for gender, is positive but non-significant at 10% level of significance. This suggests that female as well as male knowledge workers feel same about the level of Knowledge Technology available in their organization. However, the female knowledge workers have more positive perception about the Knowledge Technology available in their organizations than their male counterpart.

Table No. 15: Coefficients of Dummy Variable for Gender Differences

Model	Unstandardized Coefficients	Std. Error	Standardized Coefficients	T	Sig.	95% Confidence Interval for B	
	B		Beta			Lower Bound	Upper Bound
1 (Constant)	-4.978E-02	0.076		-0.654	0.514	-0.200	0.100
Dum. var. gender	0.308	0.189	0.114	1.625	0.106	-0.066	0.681
a Dependent Variable: Knowledge Technology							

Hypotheses testing: As the table no. 3 clearly writes that only one Principal Component could be extracted out of 5 technology items, so we reject the null hypothesis and accept the first alternative hypothesis, H_a1 (i.e. the Knowledge Technology is a unitary variable encompassing all the three aspects of it viz., user idiosyncrasy, contextuality of Knowledge, and intimate connectivity between knowledge and users).

The t values of “dum. var. sec. 1” (shown in table no. 14) is significant at 5% level of significance. The sectoral differences was found out in our data analysis. As it was supposed to be, the organizations belonging to IT sector are far ahead in having Knowledge Technology which has aspects such as ability to cater to user idiosyncrasies, contextuality of available Knowledge, and intimate connectivity between knowledge and user. So, we reject the second null hypothesis and accept the alternative hypothesis H_a2 (i.e. the availability of Knowledge Technology is different in organizations belonging to different sectors).

The t value of “dum. var. gender” (shown in table no. 15), which stands for gender, is positive but non-significant at 10% level of significance. So, we accept the null hypothesis that there is no gender difference regarding the perception of Knowledge Technology in their respective organizations.

Findings, Conclusions, and Recommendations

The Knowledge Technology variable as a principal component derived from 5 items which represents various aspects of Knowledge Technology in terms of that caters to user idiosyncrasy, contextuality of knowledge, and intimate connectivity between knowledge and user (Merlyn & Valikangas, 1998). However, the knowledge workers want to have primary focus on 'intimate connectivity between knowledge and user' involving both full accessibility of data and networks. It was supposed to be the primary focus as full accessibility and connectivity to a wide variety of knowledge is very important for knowledge workers. It also shows the broader idea of full accessibility and connectivity to knwoledge. After that only, its natural for the focus to get narrower. That's why, 'the contextuality of knowledge' is the second preference for the knowledge workers. Out of all the information and knowledge available in the network, the knowledge worker would love to get ready access to the relevant knowledge itself. They don't want to get bogged down in information overload. Lastly, the learning needs of the knowledge workers are focussed through tailor-made, effective and efficient computer based information system to support and cater to individual knowledge workers' idiosyncrasies. These preferences also point out the ways ahead for the knowledge organizations to follow, as recommendations are, viz.:

1. First of all, the Knwoledge Management Systems should be desinged in such a way that every knowledge worker should have full access to information and knowledge through the easy accessibility of network computer systems. It means multiple computer nodes on each floor and in each department and division.
2. Adaptable and manoeuvrable software systems.
3. Well designed tailor-made, effective, and efficient computer based information system.
4. Organized knowledge repositories.
5. Access to knowledge repositories without boundations.

Limitation of the Study

At the outset, it seems that the Knowledge Technology can solve all the problems in the process of knowledge management activities. But, Davenport & Prusak (1998) pointed out that the technology is not the complete answer to all the problems of KM. There are several other ingredients that help in the success of knowledge management and make a perfect knowledge organization. Some KM issues are not only technological but related to behavior factors (Calantone, Cavusgil, & Zhao, 2002), leadership and cultural factors (Kumar, 2012; Kumar, 2013; Kumar, 2014). Other than that, this study was conducted in only six knowledge organizations located in India with a sample of 204 knowledge workers. Hence, its generalizability is limited to other similar contexts. The limitations of the questionnaire survey technique also apply. Regardless of the limitations of the Knowledge Technology per se in the success of knowledge management, this study tries to bring back the focus on the requirement of newer technology i.e., Knowledge Technology which can enable and facilitate the success of knowledge management in the organization of the 21st century.

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