Investigating the Indispensable Role of Knowledge Management Architecture in Academic Institutions: An IT Facilitated Knowledge Driven Approach

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Abstract: The present economy and development across all the sectors are witnessing remarkable changes with reference to technological outbreak which has made almost each process and function disruptive and uncertain. This makes the necessitating role of technology to be an intrinsic part and dimension deciding an organization success. The era marked with need, relevance and applicability of technology aims towards making knowledge availability, generation, dissemination and application easier and result centric. Every organization considers human capital, technological capital and organizational capital to be most contemporary and relevant whenever talked of progressive move. With respect to all these three dimensions it is the art and strategy with which knowledge is managed in form of whether new theories, processes, technology, manuals and ideas been translated in action that decides the sustainability of any organization.

The present paper aims to understand the basic components that form the knowledge architecture for academic institutions as knowledge creation, sharing, transferring and building of knowledge takes largely in this sector. It is one such unique functionary wherein the past theories and existing knowledge works as fundamental cause to look forward for future knowledge creation. The outcome/findings of the paper will be useful in developing insights for academic institutions to instil the unparalleled role of these dimensions/factors in building knowledge environment in the institutions and thus deploying the same in building a knowledge centric environment.

Keywords: Knowledge management, KM Architecture, Academic institutions, technological advancement.

INTRODUCTION

The only certain factor that ensures the sustainability of any organization or process is its created and developed knowledge. Knowledge is a composite factor that represents a lot of things when talked of right from the existing theories, principles, practices, beliefs, thoughts, ideas, action and outcome which can help in facilitating the process and help in accomplishing the organization task what is refereed as intellectual and organization capital or whether it is technological capital is the knowledge created by it which reflects its innovative and developmental perspective towards organization. Academic institutions are largely dependent and the future is guarded by the knowledge they create in form of new theories, researches and application oriented outcome.

The other challenge which make this topic more relevant is whether the knowledge created is applicable, is shared or not and whether it will contribute in long term or not. For this to happen there is a necessity to build a KM culture and empower the employees towards creating, sharing, developing and practicing the knowledge created in the organization. But for this to happen it is important that right form vision, mission, long term objectives, strategic and operational plans and overall organization leadership style, culture and practices matches with that of the KM architecture. It needs a thoughtful strategy based on the functional areas of academic institution keeping in mind the academic delivery and the stakeholders interest into consideration. Human capital call it intellectual capital is the most critical factors and it is largely seen that today most organization spend huge in form of investment on ensuring the right procurement, development, motivational and retention of this intellectual capital in the organization. The same can be transferred to industry which is the biggest stakeholder form the academic institutions. Thus, if this KM is practiced effectively it benefits in manifold ways to almost all stakeholders of the organization.

STATEMENT OF PROBLEM

The problem statement in the study is to determine the factors that affect the building of KM in any organization and how based on the demography of the employees its development, practice and application in academic institution gets affected. Thus, if the factors that affect the Knowledge creation, development and dissemination are understood it will help in building a new way to make employees empowered, motivated, self-driven and contributively towards organization success.

LITERATURE REVIEW

Different studies have agreed and focussed on the role of collaborative working and leadership as important determinants of organization success. In a study [1] they came out with a model called Wu advantageous model of collaboration which focusses on role of competence building, culture building, alliance and network building, along with role of infrastructure in developing knowledge base for any organization.

Another important determinant in this knowledge management function is that of trust and sharing which decides to a large extent the future of knowledge management. According to a study [2] who found that knowledge management effectively is only possible when the organization keeps in touch with the external challenges and has strong technology base along with a culture of trust and sharing goals based on mutual benefit of all.

With reference to applicability of KM in academic institutions [3] in his study with relevance to academic institutions focussed on role of research capacity building in organization as necessary factors affecting knowledge building. He also focuses that for this research capacity building it is important that a suitable leadership committed behaviour paves way for effective knowledge development as a result of targeted research and outcome.

In various studies the focus is on another major determinant called role of ethics in knowledge building and management [4]. They agree that creation, sharing and building of any knowledge depends on how ethically the goals and objectives of the organization are designed and are communicated to employees down the line.

Many researchers commonly found commitment as one of the major determinant behind building of KM. [5]. They agreed that commitment when talked focuses on values of work, responsibility and devotion to work with a joy and accountability which actually helps in deriving satisfaction as well as a team worm spirit towards work.

Similarly, in a study conducted [6] with role of KM in university pattern they emphasized that it is very important for academic institution to relate knowledge creation and management as one of the mission of their institution and accordingly develop curriculum and procedures which support innovativeness, risk taking, improving efficiency and effectiveness of each participant.

One of the other major determinant towards building KM which can turn either into a highly supportive factor or may be a hindering factor is the technological know-how, support and expertise available in any organization. Several researchers have focussed the inimitable role of technology in effective KM [7] focussed that accessibility, location of storage and implementation of knowledge is to be strongly developed to ensure long term usage and utility of the created knowledge. They also focussed that if developed effectively KM can work as a business strategy for every organization to help relate each of its goals with that of knowledge objective and ensure participation of complete organization in this cause.

Some other pioneer study in KM[8,9] which talks of dependence on educational institutions by the industry, society and country's development emphasizes on the fact of creating knowledge and its effective management as one of the most significant goal of any organization .[8] .He talks of initiative that academic institutions should take to benchmark the best practices and reengineer the same in the institution so that all the stakeholders have a win-win situation towards knowledge creation and its effective management.

Thus, from the above literature survey different dimensions that affect KM architecture building can be identified. This also supports the fact that knowledge management is one of the strongest determinant behind organization success and sustainability.

RESEARCH DESIGN

Based on the literature survey and the factors been identified that play important role in understanding framing KM architecture in any organization the factors were included as a part of the questionnaire to understand what makes KM architecture and its contributively role in organization building.

Type of research is exploratory, the sample consisted of faculty members working in different colleges and universities both government and private. Total 300 questionnaires were distributed out of which 220 fully filled questionnaires were received. Primary data through structured questionnaire was collected. The sample consisted of both faculty members and administrative heads at different capacity to understand their perception and thought process about knowledge architecture.

The questionnaire consisted of two parts. Part A comprised of demographic details of the respondent and part B consisted of questions based on different items been taken from literature review. Pilot testing was conducted to check reliability and appropriateness of the selected variables based on questionnaire on a 5-point scale. The Cronbach alpha for the selected constructs was 0.7645 which indicated good internal consistency.

Base on review of literature several dimensions like- need of KM and role of intellectual capital, the future of intellectual capital, the available and commitment of organization towards knowledge building and dissemination, the availability of trainers to provide and prepare employees for KM architecture building, the created knowledge base and material to impart training, effectiveness of communication channels, clarity in strategy of KM application and assessment, the role of organization culture on embedding and disseminating knowledge, , Km as everyone accountability, technological backup in the organization, organization vision and support, the future dependence on knowledge creation and storage etc. were identified and as important factors affecting KM architecture in any academic institution. Based on the dimension's questionnaire was prepared and factor analysis was run to identify the basic factors of KM architecture and then since the data consisted of both male and female employees significant difference based on demographic factors was tried to be assessed.

The findings of the study will be helpful for academic institutions to develop the basic foundation of creating knowledge management as one of the determinant to produce explicit knowledge from academicians, design and create training plans in the same lines, prepare the workforce as per the knowledge requirement of the organization based on internal and external challenges.

OBJECTIVES OF STUDY

The basic objectives of the study are as follows-

    a)   To Identify the components or underlying factors that build Knowledge management architecture.

    b)   To understand the role of demographic factors in assessing the importance attached to dimensions/ components of Knowledge architecture.

    Null Hypothesis 1- H01 The dimensions depicting KM architecture cannot be specific

    Null Hypothesis 2- Ho2 There is significant difference between expectations towards KM architecture with respect to demographic factors like age, tenure and gender in different academic institutions.

ANALYSIS AND INTERPRETATION

Demographic profile of respondents

It is clear form **table 1** that respondents were in the age group 30 and less than 40 years of age which reflects availability of majority of young workforce there were more males than female respondents. Respondents consisted of 53.18% males and 46.81 were females. Out of the total respondent's majority consisted of teaching category 57.72% were in teaching and 42.27 were in non –teaching.

The majority respondents had experience of 5-10 years (44.09%), 23.63% with less than 5 years of experience 20.45% of people had 10-15 years of experience and only 11.82% respondents had more than 15 years of experience, thus it was clear from the table that majority respondents were average experienced and hence the chances of knowledge assimilation, absorption and the return which they should create in form of new knowledge should also be greater if worked upon strategically.

Table 1

Factor		Frequency	%
Age	Less than 30 years	35	15.91
	30-40 Yrs	75	34.09
	40-50 yrs	69	31.36
	50&above	41	18.63
Gender	Male	117	53.18
	Female	103	46.81
Tenure	Less than 5yrs	52	23.63
	5-10 yrs	97	44.09
	10-15 yrs	45	20.45
	15 yrs and above	26	11.82
Profile	Teaching	127	57.42
	Non-teaching	93	42.27
Nature of university	Government	115	52.27
	Private	**105**	**47.72**

In order to determine the appropriateness of factor analysis for the set of identified variables KMO and Bartlett test of sphericity was applied. KMO (0.743) measures the magnitude of the observed correlation coefficients to the magnitude of partial correlation coefficient.

Based on the first objective which aimed at understanding the factors that define the KM architecture factor analysis was run to identify and extract factors that affect KM architecture.

Based on the variance extracted from the factors after rotation it was clear that factor 1 represents 36.068% of variance whereas subsequent factor represents smaller variance. All those factors which have Eigen value greater than 1 are extracted and it is clear from table that total 2 factors are extracted.

It represents rotated factor loadings. The factors that load high on **factor -1** and their general theme when the related sub dimensions were seen relates to the visionary insight of leaders and their commitment towards building knowledge management. All the related sub dimensions' focus on the same and can be termed as **"Strategic visionary and leadership".**

Similarly, for **factor -2** items that have high loading seem to be related to role of technological upgradation with items like availability of inert and intranets, technical tools, training tools as an important element of ensuring development of KM in any organization. This factor can be termed as **"Role of Technological upgradation".**

Similarly, the questions I form of items that show high loading in factor-3 are related to a common theme which can be labelled as **"Organization Culture"** which can be assessed as a b important architectural factor for knowledge management.

Similarly based on the variance and loadings in factor 4 the sub dimensions focussed on role of communication pattern, instructions, sharing the vision and long term objectives and perception with reference to KM building hints to label the fourth factor **as "Communication style".**

Thus, it can be seen that a based on the response and the factor analysis the four factors which can be considered as the basic determinants and components of KM architecture and can aid in building a successful architecture includes –

1. Strategic visionary and leadership
2. Role of Technological upgradation
3. Organization Culture
4. Communication style

Table 2
Rotated Component Matrix

Questions	Question statements	Components			
		1	*2*	*3*	*4*
2	Organization accepts that future depends on knowledge	0.787			
3	Leaders believe in implementing KM	0.767			
5	Leaders believe KM should be a part of culture	0.865			
7	The policies and practices supprtKM implementation here	0.756			
9	Leaders and employees are committed to implementation of Km	0.798			
8	There is sufficient clarity and transparency in implementation of Km	0.684			
11	The organization trains employees for making KM a success	0.783			
4	The organization mission and vision are in line with KM	0.758			
13	The organization has sound technological support to Km implementation		0.785		

contd. table 2

Questions	Question statements	Components			
		1	*2*	*3*	*4*
17	The communication channels are open and supportive		0.756		
19	The organization has effective trainer s to train employees on KM		0.812		
1	The organization provides training material to train and empower employees			0.689	
14	The organization emphasizes on sharing knowledge at all levels			0.687	
15	Organization feels that KM is everyone 's responsibility			0.856	
16	Organization feels that sharing, disseminating storing knowledge for future use is a must		0.687		
17	Organization emphasizes on role of open and participative work culture for KM success			0.786	
18	Organization has a consistent evaluation system for assessing KM progress				0.653
19	At different level organization managers share and exchange knowledge				0.746
20	Organization through its different activities and program enhances knowledge exchange program				0.834
21	**Organization consistently provides varied practices and strategies to a accelerate better knowledge storage sharing and usage.**				**0.785**

Also to determine the significance of each component based on their mean scores it was seen that almost all four components of KM architecture had similar degree of approval with respect to their role in building KM architecture. Thus based on factor analysis and from scores it can be inferred that the null hypothesis is rejected and thus these 4 identified factors are significant factors of KM architecture for academic institution.

The second objective of the study is to determine if there is significant difference in perception of importance towards these factors based on demography of respondents viz age, profile, gender, tenure. It was assessed using z test.

Table-6,7,8 shows that there is no significant difference towards importance and perception towards these 4 factors affecting KM architecture and thus it can be inferred that respondents consider all these 4 factor crucially important for building KM architecture and helping organization to grow knowledge wise and outperform thus ensuring commitment and contribution from everyone translating knowledge in most visible form.

Table 3
Z test between low age and high age groups to assess importance attached to KM factors

Category	Mean	Std. Error	Z-value
Higher age group	52.86	2.10	3.759
Lower age group	45.40	2.09	3.746

From the above table I is clear that value of Z is greater than the significance value 0.5 thus rejecting the null hypothesis that there is significant difference with respect to importance attached to KM factors based on age of employees. Thus, it can be inferred that irrespective of differences in age group all respondent agree that KM architecture is significantly important for organization success and that these factors are major determinants of KM architecture building.

The other dimension of demographic factor was difference in importance attached with respect to gender of employees.

Table 4
Z test between male and female group to assess importance attached to KM factors

Category	Mean	Std. Error	Z-value
Male	145.644	23.34	3.04
Female	139.341	26.83	3.06

From the above table it is clear that since the value of z is greater than the significance value here thus it can be inferred that there is no significant difference towards the importance attached to KM architectures and its factors based on gender of employees and both male and female considered it as an equally important for organization development.

Table 5
Z test to assess importance attached to KM factors based on tenure of employees

Category	Mean	Std. Error	Z-value
5-10 yrs	36.87	1.27	5.014
10-15 yrs	25.45	1.28	5.128

The table which aimed at assessing the difference in importance attached to KM architecture and its dimensions abased on tenure of employees, based on value of Z it is clear that since the value of Z is greater than the value of significance null hypothesis is again rejected and thus it can be inferred that irrespective of tenure long or immediate all the respondent attach similar importance to the role of KM in effective organization building.

Thus from above discussion based on second objective of study it can be concluded that based on demographic factors the perception and importance attached to factors remains similar and it is a positive indication that workforce equally agrees that if implemented KM can help in giving a new direction to the institution with respect to its knowledge creation, dissemination, development and assessment thus helping everyone to grow.

IMPLICATIONS OF STUDY

Thus based on the findings of study it can be concluded and inferred that knowledge being a highly quantitative and ever growing function aims at making people empowered, independent, participative and contributively with respect to knowledge creation and growth. It will help in developing new insight for training, development, appraisal, designing curriculum, development of students and faculty members with respect to external challenges and thus making the best utilization of both tangible and intangible resources.

CONCLUSION

Thus, from the above study it can be concluded that knowledge management is most imperative when talked in context to changing dynamics of organization and surmounting challenges. With rising expectations of all the stakeholders across academic institutions right from students, faculty fraternity, industry, society, the only tool that can create a distinctive capability for any organization is its created knowledge and the strategy with which it is practiced amongst the employees. The intellectual capital being the most significant and differentiating factor for any organization need to focus consistently on how their efforts are been driven towards creation of knowledge base that can help them to grow, expand, share and develop. If worked properly and sequentially these identified KM factors can be aligned to long term organization objectives of organization.

This needs support from organization culture and a suitable organization climate that can help knowledge architecture to grow and contribute. It also requires a dedicated and heroic leadership supported by technological knowhow and upgradation with clear lines of communication cross different channels to ensure smoother transition while knowledge is being create and shared. It is equally important that all the employees should realize the significance of KM architecture equally to remain competitive and contribute towards it.

Thus, academic institutions should strive hard to create a culture that can assist in building KM culture and train and empower employees towards it. Such aa culture will help innovation, creativity, autonomy, openness and team work more and more and will help in accelerated growth of organization.

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