

Knowledge management practices in Indian information technology companies

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The present paper lays the foundations for the best practices in knowledge management and investigates the degree of awareness and implementation of KM principles and practices in Indian information technology (IT) companies. A purposive sample of 10 IT companies in North India was chosen for study and a survey was conducted with the objective of investigating the degree of awareness and implementation strategies of knowledge management. The present research work is based on secondary data obtained from 10 IT companies. The various phases of knowledge management (knowledge generation, knowledge codification, and knowledge transfer and knowledge application) were taken into account and data were interpreted on the basis of weighted scores for each parameter at each phase. Final conclusions were drawn on the basis of the Knowledge Management Index. The interpretation of data revealed that the Knowledge Management Index (KMI) for awareness and commitment is very high as per the pre-defined rating scale but the involvement of top management in allocating the necessary resource flow to initiate and sustain knowledge management practice is needed. It was very clear that though people are aware of the importance of documentation and it is being prepared to some extent, a lot needs to be done in this field. Only very critical information is documented and maintained in archives, whereas general information (which forms 30%–40% of daily work input) is not documented. The common perception was that there should be a mechanism through which the ideas of engineers/programmers can be implemented since the company can gain only if ideas are translated into tangible benefits. The Knowledge Management Index for awareness of intellectual property in IT companies was found to be too low, which is an area of concern, but the same was high for information technology. It was also revealed that HR professionals have to realise that true competitive advantage lies in the people and the best HR practices should be aligned to strengthen knowledge management.

Keywords: knowledge management; IT companies; Knowledge Management Index

I Introduction

Much has been written in recent years about the importance of knowledge management as a basis of competitive success. Knowledge is seen as a dynamic resource, valuable only when it is used. When organisations routinely take the time and make the effort to review what they know, knowledge becomes an asset in support of purposeful action.

The concept of knowledge as a decisive factor affecting an organisation's ability to gain competitive advantage (Von Krogh et al., 2000) has been steadily gaining prominence in the present global era of the last few years. It has been recognised as a valuable resource, which will behave organisations to 'develop a mechanism for tapping into the collective intelligence

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and skills of employees in order to create a greater organizational knowledge base' (Bollinger & Smith, 2001, p. 8). It is the management of knowledge that will achieve this goal. The quest for, and management of, knowledge, is an exceedingly old one, and both Eastern and Western philosophies have a long, documented tradition 'of emphasizing knowledge and understanding for conducting spiritual and secular life' (Wiig, 2000, p. 4).

In the present scenario of rapid change and technological advancement the focus has to be on knowledge management which is often explicitly oriented to matters of competitive advantage and commercial effectiveness. Unfortunately, there is no universal definition of knowledge management, just as there is no agreement as to what constitutes knowledge in the first place. For this reason, it is best to think of knowledge management in the broadest context. Succinctly put, knowledge management is the process through which organisations generate value from their intellectual and knowledge-based assets. Most often, generating value from such assets involves sharing them among employees, departments and even with other companies in an effort to devise best practices. It is important to note that the definition says nothing about technology; while knowledge management is often facilitated by IT, technology by itself is not knowledge management.

It has to be recognised that motivating individuals, providing meaningful work, appropriately rewarding the right behaviours, and empowering individuals to be creative and innovative is possible only by encouraging an environment that is open and sharing, where knowledge is used to discover how existing knowledge can best be used and managed to produce results, that is, 'knowledge applied to knowledge itself' (Allee, 1997, p. 6).

Palmer and Hardy (2000) argue that the increasing rate of environmental change and technological complexity demands organisational forms in which knowledge-based information is widely disseminated. It has been suggested that knowledge management and learning should be integrated into one generic process (McClean, 2000) to enable further development of the underlying constructs. Rowley (2000) proposes a model in which information leads to learning which leads to knowledge, which affects decisions, actions and behaviour. Similarly, Dixon (1994) suggests that knowledge is the result of learning: learning is sense making and is the process that leads to knowledge.

Knowledge management caters to the critical issues of organisational adaptation, survival and competence in the face of increasingly discontinuous environmental change. Essentially, it embodies organisational processes that seek the synergistic combination of the data- and information-processing capacity of information technologies, and the creative and innovative capacity of human beings. This is a strategic view of knowledge management that considers the synergy between technological and behavioural issues as necessary for survival in 'wicked environments'. The need for synergy of technological and human capabilities is based on the distinction between the 'old world of business' and the 'new world of business'.

Within this view, the 'old world of business' is characterised by predictable environments in which the focus is on prediction and optimisation-based efficiencies. This is the world of competence based on 'information' as the strategic asset and the emphasis is on controlling the behaviour of organisational agents toward fulfilment of pre-specified organisational goals and objectives. Information and control systems are used in this world for achieving the alignment of the organisational actors with pre-defined 'best practices'. The assumption is that such 'best practices' retain their effectiveness over time.

In contrast, the 'new world of business' is characterised by high levels of uncertainty and an inability to predict the future. Use of the information and control systems and compliance with pre-defined goals, objectives and best practices may not necessarily achieve long-term organisational competence. This is the world which challenges the assumptions

underlying the 'accepted way of doing things'. This world needs the capability to understand the problems afresh given the changing environmental conditions. The focus is not only on finding the right answers but on finding the right questions. This world is contrasted from the 'old world' by its emphasis on 'doing the right thing' rather than 'doing things right'.

The relevance of knowledge management is unquestionable for companies because what worked yesterday may or may not work tomorrow. This is the only tool that helps an organisation to gain insight and understanding from its own experience. It includes the systematic process of finding, selecting, organising, distilling and presenting information in a way that improves an employee's comprehension in a specific area of interest. Specific knowledge management activities help focus the organisation on acquiring, storing and utilising knowledge for such things as problem solving, dynamic learning, strategic planning and decision making. Moreover it protects intellectual assets from decay, adds to firm intelligence and provides increased flexibility.

Managing knowledge and fostering a culture that enables knowledge management efforts to be implemented successfully are crucial for maintaining strategic advantage and meeting business objectives and this was the primary concern of the researchers in the present study. With the paradigm shift from a business economy to a knowledge economy, where learning about the application and development of knowledge is central, knowledge management systems operate with many objectives, including: improving the performance of organisational systems and processes, persuading people to share (Havens & Hass, 2000), leveraging and using the uniqueness of the organisation to capitalise on the mix of people, processes, services and products that defines its identity and place in its competitive market (Abell & Oxbrow, 1999, p. 4-1), building and exploiting the organisation's intellectual capital effectively (Wiig, 1999) and making knowledge more visible throughout the organisation (Allee, 1997). The transformation of an organisation into a knowledge-driven organisation is essentially a people-related issue and HR professionals have a key role to play in nurturing and strengthening the knowledge management movement for making it the best practice in process management. Corporate education, performance management and nurturing culture are some of the HR processes that have a very significant role in the development of the knowledge-based enterprise. Moreover a knowledge management system if applied in its true sense can work on managing the psychological contract and for 'lifestyle friendly working practices' (Harman & Brelade, 2000, p. 18).

For maintaining strategic advantage and meeting business objectives, efforts to implement knowledge management successfully are crucial. The prediction that 'knowledge management will be rapidly adopted . . .' (Menon & Kurup, 2001, p. 9) is significant in the present era of globalisation. We can say that to stay ahead of the competition successful companies of the twenty-first century will be those who do the best job of capturing, storing and leveraging what their employees know. Reflecting on the significance of managing knowledge in today's era of globalisation and the meagre attention that has been paid by the professionals in identifying the processes and the practice in their large, and multinational operations to manage knowledge better, the aim of the present study were as follows.

II Objectives

The primary objectives in undertaking the present study were:

- to understand the knowledge management concepts and their working in the organisation;

- to identify the role of culture in mediating knowledge distribution;
- to identify obstacles in the generation of organisational knowledge;
- to study the factors for managing the conversion from one form to another;
- to study the transfer of knowledge between individuals and organisation.

III Research methodology

The present paper is an analytical type of research which is based on first-hand information and secondary data obtained from IT companies. In view of the objectives of the study the data were collected from a purposive sample of 10 IT companies based in North India. The companies were chosen on the basis of inclusion criteria taken for the study. Those companies that incorporate knowledge management in their mission statement and are willing to share the information on knowledge management practices were part of study. Accordingly a survey was conducted with the objective of investigating the degree of awareness and implementation strategies of knowledge management. The various phases of knowledge management (knowledge generation, knowledge codification, and knowledge transfer and knowledge application) were taken into account in designing the framework for the survey schedule, and responses were elicited on a pre-defined four-point rating scale. The data were interpreted on the basis of weighted scores for each parameter and sub-parameter. Final conclusions were drawn on the basis of a Knowledge Management Index, which can be calculated by the given formula,

$$KMI = \frac{\sum w_i \times 25}{(ni)} \quad \text{or} \quad \frac{\sum w_i \times 100}{niR}$$

where w is weighted sum score, i is number of sub-parameters, n is number of respondents and R is maximum value of rating which is four in the present study.

IV Results and discussion

The present study was conducted with the broad objective of understanding how to manage and implement knowledge in organisations. Since the data are the basis of the knowledge foundation, the data were collected for the various phases of knowledge management. The data consist of facts but are of little relevance until they are transformed into information and further into knowledge. This is possible only by comparing the information to other situations, exploring the consequences involved in using it to meet business goals, evaluating its relationship to other information, and getting opinions from others regarding it. Transforming information to the level of knowledge, where it can be used to analyse new situations and manage change, requires the added ingredients of experience, truth, judgment, intuition and values. The review of literature makes it clear that knowledge is basically a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the knower. In organisations, it often becomes embedded not only in documents or repositories but also in organisational routines, processes, practices and norms (Davenport & Prusak, 1998). It has been realised that it is necessary to capture various forms of organisational knowledge – namely, explicit, tacit and cultural – in order to meet the needs of the future.

While undertaking the study, it was fairly easy to capture the explicit knowledge as it is unambiguous and rules-based or procedural in nature. Reports and published documents

are examples of explicit knowledge as are policies, procedures and databases. To meet the needs of the future, it will be necessary to capture explicit knowledge to be used as input for decision systems and decision-based systems for unmanned weapon platforms. The tacit, or implicit, knowledge was much more difficult to capture than explicit knowledge; however, it is worth the effort. This knowledge was difficult to recognise or articulate as one acquires it mainly through personal experience and action, such as leadership, rather than through formal training and doctrine and it was realised by all organisations.

It cannot be reduced to procedures or rules and it is not easily generalisable. Since it was possessed by the individual, it can be utilised only when the individual has time to share it and may be lost completely if that individual leaves. The cultural knowledge involving the values and norms of the organisation and how the past influences the present and the future was relevant from the HR perspective. The HR professional can play an important role in promulgating an appropriate culture: that is, one where knowledge management is seen and understood as a decisive tool, and source of competitive advantage. It has been already proved that management's failure to take up new ideas more quickly is an important factor in Australia's poor performance in terms of international productivity (Prescott, 1996, cited in Stone, 1998, p. 312) making the issue of managing knowledge through HR professionals more relevant. If viewed strategically training and development, an important HR function, can be a vehicle for global knowledge transfer (Ready, 1995, cited in Stone, 1998, p. 316).

The secondary data from 10 IT companies had revealed that implications of knowledge management for an individual and an organisation are different. In an individual it means awareness, training and lifelong learning. For an organisation it means to have a learning culture, able to exploit available resources. In both cases ideally, management has to foster a collaborative climate for creating and sharing knowledge, providing recognition and rewards to those who significantly contribute to the knowledge effort, and providing technological resources to facilitate the access, use and sharing of the knowledge. If only this can be taken care of by HR professionals it can be the best practice in today's turbulent environment. Knowledge management must be tailored to the needs of an organisation and integrated with the systems to be fully effective. Determining who needs access to what information, and when and how the information flow will be managed is part of knowledge management.

The secondary data also reveal that the process of managing knowledge starts with a brain-storming session to assess the knowledge gap (if any) and then it works on acquiring knowledge. The principal sources of knowledge acquisition were the Internet (open literature), training programmes, technology transfer and interaction with customers. With regard to knowledge codification, the knowledge was stored in the form of experience of personnel, departmental procedure manuals, drawing office manuals where guidelines are given, technical reports, process sheets, databases of different projects, sequential operations of the job, mode of inspection and tools to be used. The knowledge sharing and dissemination was through encouraging the software designers to share knowledge on various national and international platforms through paper presentation on various design-related aspects. Moreover, sharing of knowledge also takes place through quality circles, review meetings (e.g. design review, production review, etc.), shop level meetings, through problem solving, informal discussions, on-the-job training through various assignments, face-to-face interaction and work instructions given in the job card. The main advantage of this procedure is that there will be no communication gap. Flow charts and training programmes give exposure in the use of specific software along with updating of current level of skills and knowledge. When it comes to knowledge application, the

knowledge acquired from various sources was applied in the day-to-day issues related to different projects. The most frequently used modes of problem solving were cross-functional task teams/study teams formed to get multidimensional insight into any problem, engaging experts from both within and outside the organisation, contacting academic institutions, formation of a committee consisting of members from design, shop, quality, and government agency. These organisations, being from the IT sector were extensively using software (CATIA, Unigraphics, etc.) that leads to a paperless project that has the ability to store past knowledge through parameters and formulae. We can even pre-assign values for certain parameters. These software packages were filled with excellent features, which help designers in accomplishing their goals reducing the time consumption and helping to speed up the system.

In virtually every survey, customer knowledge tops the list as an organisation's most vital knowledge. Similarly in the sample population taken the focus was on customer knowledge. Classifying perceptions and experiences of customers and thereby bringing about a change in the organisation towards customer service or products were major other dimensions of knowledge management. For this purpose a taskforce was constituted to work on e-maintenance, both at the development stage as well as the customer operation stage. Some of the organisations also had electronic manuals for providing services.

Keeping in mind the objectives of understanding the knowledge management concepts, its working in the organisation and identifying the role of culture in mediating knowledge distribution, a survey was conducted. The survey revealed the linkage of culture and knowledge defining not only what knowledge is valued, but also what knowledge must be kept inside the organisation to support core competency. It was very clear that culture mediates knowledge distribution at individual and organisational levels. It embodies all of the unspoken rules about how knowledge is to be distributed between the organisation and the individuals in it. It legitimates what knowledge belongs to the organisation and what knowledge remains in control of the individual. As researchers we have to recognise that culture is the silent broker, or mediator between individual and organisational-level knowledge, and the importance of renegotiating norms around knowledge distribution, ownership and access becomes more evident. A firm's culture heavily shapes how new organisational knowledge is captured, legitimated (or rejected), and distributed throughout an organisation.

Table 1. Organisational culture.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Knowledge acquisition and dissemination is not restricted to hierarchies.	72	68	39	21	591	2.96	
2	There is a defined process in the company to document experiences gained from earlier performances and apply them for future.	59	90	31	20	588	2.94	73.38
3	Failure is taken up as a learning opportunity to augment learning culture.	74	63	34	29	582	2.91	
	Total	205	221	104	70	1761		

Data interpretation: organisational culture

The Knowledge Management Index for culture in the sample population comes out at 73.38%. This was calculated by putting the values in the formula mentioned above and then dividing the total weighted sum score by the function of total number of responses and pre-identified sub-parameters (3 in organisational culture). The value when further divided by the highest weight assigned gives the index of knowledge management, which has been represented as a percentage. In the same way the KMI was calculated for various parameters taken in the present study.

This is *average* as per the pre-defined rating scale. As per the responses of respondents, a clear perception was observed that there is a need to document experiences gained from earlier projects so that this learning can be applied on future projects. They had the general belief that companies must be able to capture, validate and distribute new knowledge fast enough to change strategic direction and resource allocations, if they are to prosper in turbulent environments. Companies whose culture is most effective at creating and integrating new knowledge into the organisation have norms and practices that demand broad participation in knowledge gathering and distribution.

Table 2. Understanding and commitment.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Management has the vision to integrate knowledge management process into the business plan.	88	78	22	12	642	3.21	81.25
2	The top management must have the commitment to implement the knowledge management process.	76	74	36	14	612	3.06	
3	Knowledge management programme should follow top-down approach instead of bottom-up approach.	132	40	20	8	696	3.48	
	Total	296	192	78	34	1950		

Data interpretation: conceptual understanding and commitment

The Knowledge Management Index for conceptual understanding and commitment in the sample population comes out at 81.25%. This is *very high* as per the pre-defined rating scale. The perception was evident that knowledge management should become a policy in the company. The involvement of top management is needed in allocating the necessary resource flow to initiate and sustain knowledge management practice. Any progress made in this regard was appreciated by the entire organisation and the time and money invested should not be considered a waste. If knowledge management is part of the mission statement, it will clearly reveal which are the desired behaviour and attributes to be acquired by all employees to attain the overall business goals. A knowledge management drive requires awareness and commitment from the top management. Attention should be given to including knowledge management in the mission statement and this was the prerequisite in selecting the sample.

Table 3. Knowledge acquisitions.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Groups and individuals and routinely document and share information about their expertise.	68	84	31	17	603	3.02	
2	Training on new systems focuses on how these technologies can be used to improve the quality and efficiency of people at work.	105	80	10	5	685	3.43	
3	The electronic and traditional sources of knowledge contain a wide spectrum of state-of-art information on critical activities.	102	79	15	4	679	3.40	85.73
4	Experts play a role in identifying, collecting, classifying and disseminating important information for other users.	180	18	2	0	778	3.89	
5	Effective cataloguing and archiving procedures are in place for document management.	104	80	12	4	684	3.42	
	Total	559	341	70	30	3429		

Data interpretation: knowledge acquisitions

The Knowledge Management Index for acquiring knowledge in IT companies comes out at 85.73%. This is *very good* as per the pre-defined rating scale. S. No. 1 & 5 reveals that though people are aware of the importance of documentation and it is being done to some extent, a lot needs to be done in this field. Only very critical information is documented and maintained in archives, whereas general information (which forms 30%–40% of daily work input) is not documented. This results in high lead-time for retrieving basic information at the start of any project, which is quite avoidable. From S. No. 4, it is clear that there is a perception that knowledge resides with experts or senior people (due to experience), which has to be passed down the line.

Table 4. Knowledge usage.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	We give all innovative ideas thorough consideration, no matter where they come from.	68	82	40	10	608	3.04	
2	There exists an explicit mechanism to translate ideas for furtherance of business goals.	40	74	62	24	530	2.65	71.13
	Total	108	156	102	34	1138		

Data interpretation: knowledge usage

The Knowledge Management Index for using knowledge in IT companies comes out at 71.13%. This is *average* as per the pre-defined rating scale. There is a perception that there should be a mechanism through which the ideas of officers can be implemented. The company can gain only if ideas are translated into tangible benefits.

Table 5. Information technology.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Information technology is the key enabler in ensuring that the right information is available to the right people at the right time.	146	40	10	4	728	3.64	91.00
	Total	146	40	10	4	728		

Data interpretation: information technology

As expected the Knowledge Management Index for information technology in the sample population was high, coming out at 91.00%. This is *very good* as per the pre-defined rating scale. IT companies are extensively using software like CATIA and CAD as a knowledge tool while designing. In a few companies the company-wide linkage through groupware (like LAN) is a significant achievement in this direction. It was suggested that LAN can be used more extensively for information sharing and also centralised cataloguing of reports can go a long way in managing knowledge throughout the company. Extensive use of information technology as a tool for dissemination of information and knowledge sharing will be very effective in this process.

Table 6. Learning.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	People apply what they learn outside the organisation after due customisation to their work.	68	102	24	6	632	3.16	
2	Our learning process often includes gathering feedback from customers.	79	96	15	10	644	3.22	79.75
	Total	147	198	39	16			

Data interpretation: learning

The Knowledge Management Index for learning in chosen IT companies comes out at 79.75%. This is *average* as per the pre-defined rating scale. There is a perception that as IT companies are technology driven, there is a constant need that the learning of the people through seminars, training, deputation abroad may be applied to the workplace after due customisation. These companies also had direct interaction with customers to get feedback for improving their products.

Table 7. Sharing of knowledge.

S. No	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Cross-functional groups are operational to promote knowledge sharing.	41	76	59	24	534	2.67	
2	Face-to-face interactions are used to transfer 'difficult to articulate' tacit knowledge.	62	88	34	16	596	2.98	
3	There is a programme of active participation in business conferences and other discussion forums to share and learn ideas and experiences.	48	112	34	6	602	3.01	72.17
	Total	151	276	127	46	1732		

Data interpretation: sharing of knowledge

The Knowledge Management Index for sharing of knowledge in IT companies comes out at 72.17%. This is *average* as per the pre-defined rating scale. Managers and developers are encouraged to participate in various forums to share their knowledge. Sharing of knowledge brings about dissemination of information and sparks off a positive change in the culture of the organisation.

Table 8. Mechanism of assessment.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	There is a review mechanism to assess whether the acquired knowledge is being transferred to the workplace.	22	68	89	21	491	2.46	61.38
	Total	22	68	89	21	491		

Data interpretation: mechanism of assessment

The Knowledge Management Index for assessment mechanism in the sample population comes out at 61.38%. This is *average* as per the pre-defined rating scale. There is no formal mechanism to transfer the knowledge gained through seminars, training programmes, deputation abroad to the workplace. A formal mechanism has to be evolved wherein the transferability of the knowledge to the work centre can be monitored on a regular basis.

Table 9. Knowledge management architecture.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Company's knowledge management architecture is reliable and self-sustainable in nature.	31	79	67	23	518	2.59	64.75
	Total	31	79	67	23	518		

Data interpretation: knowledge management architecture

The Knowledge Management Index for knowledge management architecture in the sample units comes out at 64.75%. This is *average* as per the pre-defined rating scale. The maturity level of employees towards the concept of knowledge management is nevertheless relatively inadequate. This can be overcome by consistent efforts to improve the level of acceptability of the concept by inviting experts to train and discuss will functional heads from time to time.

Table 10. Acknowledgment.

S. No.	Description	4	3	2	1	Weighted sum	Weighted average	KMI (%)
1	Knowledge management mechanism is inbuilt in the performance management system of the company.	31	68	56	45	485	2.43	62.75
2	Individuals are visibly rewarded for teamwork and knowledge sharing.	38	67	71	24	519	2.60	
Total		69	135	127	69	1004		

Conclusion

The Knowledge Management Index for recognition in IT companies comes out at 2.75%. This is *average* as per the pre-defined rating scale. It was clearly evident that individuals are not visibly rewarded for knowledge sharing. Knowledge management is to be given due importance in the performance appraisal system so that benefits of KM can be felt throughout the organisation.

There is a perception that culture is not facilitating sharing and learning in the organisation to a very high extent. Efforts may be put towards developing an organisational culture that facilitates acquisition, sharing and learning in the organisation. As a prerequisite to including knowledge management practices, managers at various levels need experience of the basic steps of the change management mechanism. This in turn will enable them to be change agents for this initiative and will dispel all preconceived notions about the success of knowledge management in these companies.

The present paper also suggests that the sharing of knowledge should be recognised and rewarded by a combination of traditional and innovative mechanisms. Authors, reviewers and users of knowledge assets can earn Knowledge Currency Units (KCUs), which can get translated into suitable rewards on reaching pre-determined threshold values and at specified calendar milestones. Individual KCU accruals can be showcased in some scoreboards. So it was further suggested that these companies provide incentives for knowledge sharing. It is important that the value of knowledge sharing should be reflected in the ongoing evaluation of performance and periodic merit reviews conducted in the company, so that managers and staff can see that knowledge sharing is one of the principal behaviours that the organisation encourages and rewards.

It was very clear that knowledge management is fundamentally an activity of managing and transferring information in such a way that one can both understand and use the information in some way and, for this, effort is required to create a knowledge

repository consisting of skills, experience, assignments, specialisations and published works of the people in organisations so that it can be used for future problem solving. Periodic knowledge management quests should be conducted to assess the knowledge gap in terms of searching for the best practices.

The purpose of carrying out this research work was also to identify challenges in the generation of organisational knowledge. The four major challenges were identified on the basis of primary and secondary data in generating organisational knowledge out of individual knowledge. The first challenge was to unload the burden of past experience out of organisational history. This past experience interferes with the receiving and processing of new knowledge as people continue referring to precedents and past events (stories) in order to defend current practices and eliminating the need for new knowledge. It blinds people from critically analysing and confronting new data or information. Therefore, unlearning of these past experiences does not happen. The next challenge was to break organisational defensive routines. Defensive routines are written or unwritten norms of behaviours in organisations, which people perceive as given, or the most 'rational thing to do'. Defensive routines prevent people from receiving new ideas, knowledge, processes, demands, etc., that do not fit with organisational norms. Change becomes difficult, as people do not want to confront reality. The third challenge in generating organisational knowledge was to overcome people's tunnel vision. People tend to view the context from their own perspective rather than adopting a systems point of view. Another challenge that impedes the generation of organisational knowledge was bounded rationality as people look for satisfying solutions, rather than optimising ones.

Finally, it can be concluded that for organisations to remain competitive and at the forefront, workers must sort knowledge from the information overload that continues to grow at an alarming rate. In addition to linking knowledge with business strategies, it is crucial to remove cultural barriers and create a supportive climate for knowledge management to flourish. Active management support is essential to ensure that cultural elements are in place. Ideally, management fosters a collaborative climate for creating and sharing knowledge, provides recognition and rewards to those who significantly contribute to the knowledge effort, and provides technological resources to facilitate the access, use and sharing of the knowledge. HR professionals have to realise that true competitive advantage lies in the people and the best HR practices should be aligned to strengthen knowledge management and if only this can be done by the HR professionals on the basis of a Knowledge Management Index, this will be the best practice in managing knowledge.

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