

From Information to Knowledge: Technology Status of Indian Companies

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Abstract

Knowledge management technology enable organizations tackle all the problems related to knowledge management more effectively at lowest costs. Knowledge management technology is useful in all the process of managing knowledge. This study presents a broader understanding of major tools and techniques of knowledge management being used in manufacturing industries. The overall findings reveal that browser was strongly preferred and Internet was preferred. All the selected research companies expect increase in their levels of usage in the KM tools over the next three years. Face-to-face meeting, email and video conference were very effective and Intranet, Application sharing, conference calls and instant messaging were effective in sharing knowledge.

Keywords: Knowledge management technology; Knowledge sharing channels; Technology

Introduction

Technology plays vital function in knowledge management, although knowledge management is not about technology. The expansions in information and communication technologies, the Internet revolution and the change toward the information and knowledge society have highlighted the importance of knowledge and the need for knowledge management. Information technology has improved our ability to store, access, manipulate, and use information in variety of ways. It provides us with the ability to improve communication between people and stimulate collaboration. While technology cannot mandate human collaboration, if used effectively it will streamline work operations and improve communication between people. Collaborative application such as e-mail, calendaring, scheduling, shared folder/databases, and threaded discussion promote knowledge sharing and knowledge transfer.

Knowledge management technologies

Knowledge management technology is a broad concept; firms can apply a wide variety of technologies to the objectives of managing knowledge, some of which have been available for many years. Most of the business content of any organization is unstructured, which includes information in files, messages, memos, reports, and proposals created in different formats and stored at many locations. The vast amounts of information can be collected, filtered and organized and be made available to those who need it in a format in which they need. This is done with the help of knowledge management tools [1]. Knowledge management tools enable organizations tackle all the problems related to knowledge management more effectively at reduced costs. Also, these tools help to leverage the collective knowledge and experience of an organization to accelerate innovation and sharpen competitive advantage. Another change inspiring knowledge acquisition and sharing is the gradually rising speediness with which new technologies are growing, at the same time, knowledge becomes outdated faster. Effective organizations need to attract and employ an increasing amount of knowledge to keep up with this improvement.

Information management vs. knowledge management

There is a difference between information and knowledge management. Information and information management focuses on the collection, structuring and processing of data. Reliable and timely data is important for effective knowledge management, but it is only

one part of the picture. Knowledge management may be originated from information, but it also implies an evaluation of the information and data and an understanding of that analysis. It also enables the application of that understanding in future practice. This last point is critical. It is not sufficient for an organization to simply have knowledge; it must be capable to control and apply that knowledge to produce improved outcomes [2].

Information management deals with the structuring, organizing, classifying and controlling of information throughout its life cycle. It involves the business processes and systems used within an organization to create and apply information. It supports knowledge management by enabling people to access, share and make sense of codified and tacit information [3].

The challenge of knowledge management is to conclude what information within an organization is treated as valuable. All information is not knowledge, and all knowledge is not valuable. The key is to find the worthwhile knowledge within a vast sea of information. Knowledge can only reside in the minds of people. Once it is outside the human mind it is information. The process of transforming knowledge into information is called codification. But not all types of knowledge can be codified or captured [4,5].

Knowledge in the form of skill and competencies can only be transferred from one person to another through training, socialization and interaction with people and environment. Knowledge management starts where information management ends. Knowledge management is a continuous process.

Purpose

The purpose of this paper is to study the various technology uses in knowledge management in Indian manufacturing companies and find out the most effective knowledge management tools/technologies in knowledge sharing.

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Research Methodology

For choosing the sample from the universe under study, only those Indian manufacturing companies have been selected which are located in Haryana. The present study is based on convenience-cum-stratified sampling. Three major industries (engineering, readymade garments, chemical and pharmaceuticals) have been taken as sample. From each industry three big companies have been selected. Total nine Indian manufacturing companies selected for this research. The research companies are Maruti Suzuki Ltd., Hero Motor Ltd, Atlas Cycle, from engineering, Hall Mark, Indian Terrain Fashions Ltd, Orient Craft Ltd from Readymade garment industry and Ranbaxy Laboratories, Dhanuka pesticides, Morepen laboratories from chemical and pharmaceutical industry. Data was collected from 490 employees working in these selected companies (Table 1).

Using Statistical Package for Social Sciences (SPSS) the following tools were administered to achieve this research objective in this study-cross tabulation, mean score and rank method.

Results and Discussions

Tools and techniques used in knowledge management

Technology help in all process of managing knowledge-acquire, create, share and application. Many technological innovations fail, mainly because their designers have emphasized the technical system instead of resolving issues relating to the organizational context, managing the introduction of the system, recognizing the needs and concerns of stakeholders, and involving managers and end-users in the change process. Some technology is useful for all steps of knowledge management process. Some are useful in only one phase of this process.

Many ideas die in the creation stage because they fail to generate interest or support, but some become more clearly formed and make it to the mobilization stage. Knowledge creation and knowledge capturing are therefore crucial practices of knowledge management and shape the first segment of knowledge management cycle. Numerous techniques and tools are used to extract tacit knowledge and to prompt the creation of new knowledge the content of which is continuously organized in a systematic manner. Table 2 described the knowledge management process, the technology use in a particular phase of KM process and the role of that technology.

This research provides some basic information about new technologies that can be used for knowledge management. The presentation of technologies is not exhaustive, but rather a starting point for the group to discuss how these emerging technologies could be used in the context of development policy training and knowledge management now and in the future. All technology discussed in separately.

S. N	Company	Sample size	Usable Responses received	Valid response rate %
1	Hero Honda	60	52	86.66
2	Maruti Suzuki	60	54	90
3	Atlas cycle	60	47	78.33
4	Hallmark	60	62	103.33
5	Indian Terrain	60	58	96.66
6	Orient craft	60	46	76.66
7	Ranbaxy	60	67	111.66
8	Dhanuka	60	54	90
9	Morepen laboratory	60	50	83.33
Total		540	490	90.74

Table 1: Company employees' survey response rate.

Status of knowledge management technology in IMC's

This study presents a broader understanding of major tools and techniques of knowledge management being used in manufacturing industries. This survey is not intended to cover all kinds of tools on the market, but to give the reader a sense of the various tools that are available for knowledge management. KM should be maintained by gathering of technologies for collecting, capturing, classifying, storing, and retrieving information, as well as for alliance and application of knowledge. Technology status can check in IMC's through adoption pattern of technology. Here adoption pattern means technology preferred or adopted by employees and the increasing or decreasing level of their usage. A brief description of technologies used by employees of IMC's is given in Table 3.

In the Table 4, stand for "Strongly Preferred" and 1 stands for "Very least preferred". The possible range of scores is 1 to 5 with high scores reflecting high degree of agreement.

It's the data support system and knowledge portal, which are highly ranked technologies used by the respondents in their organization followed by DBMS and groupware. While content management and storytelling are the least used technologies by the respondents. So it is concluded that employees strongly prefer data support system, knowledge portal technology for sharing best of their knowledge with others. It is most popular among these manufacturing companies. Storytelling is not that much effective in knowledge management.

Here 3 stand for "Decrease", 2 stands for "Neither increase nor Decrease" and 1 stands for "Increase". The possible range of scores is 1 to 3 with Low scores reflecting high Degree of increasing pattern. The browser and Internet are the most preferred expected channels for knowledge management in the respondents companies, while expert network, decision support system and data warehousing are the least preferred expected channels, which will be used by the respondents in the upcoming three years. Table 4 shows the pattern of level of using KM technology in near future. Data reveals that browser and Internet are in trending and hope to increase the uses of it more frequently in near future.

Status of training for new technologies in IMC's

KM training is available to all employees of an organization through the main curriculum system and is managed by human resource. Teams can request for KM training to make it easier to adopt and implement KM practices as a team. To support raise employees awareness and stressing that KM is everyone's duty and suitable into everything they do, KM fundamentals have been integrated into all other possibilities where fitting. Training for new technology status can check through:

- Received training for new technology
- Total time spent in training
- Usefulness of training.

Figure 1 shows that total 70.60% of respondents from engineering industry said yes, they received training for using new technologies, 75.30% respondents from readymade garment industry says yes for the same and further 84.80% respondents from chemical and pharmaceuticals industry strongly agree with this statement that they received training for new technologies. Overall finding shows that most of the employees are getting training so that they can utilize best of their knowledge and take competitive advances through higher productivity.

The number of respondents provides 1-10 hours knowledge management training is 47.10%, 48.80% and 62 percent respectively

KM process	KM technology	Role of technology
Create and acquire knowledge	Internet	The most complex information structure that we are dealing with today is the Internet. Websites are greatest used for introducing and managing content that is persistently fluctuating and associated in a complex manner.
	Browser	An easygoing application used to locate, regain and also demonstration content on the World Wide Web, containing web pages, images, videos and other files.
	COP	A community of practice is a group of people who share a common concern, a set of problems, or interest in a topic and who come together to fulfill both individual and group goals.
	E-learning	E-learning support tacit-to-tacit knowledge sharing.
	CRM	Support personnel acquire a vast amount of knowledge about the products and service the organization offers, as well as information about customers and their behavior.
	Intranet	An internal web site -or Intranet-can provide staff with a visually appealing and easy-to-use information resource.
	Document Mgt System	Document management systems excel at controlling the process of document creation, processing and review.
Share and transfer knowledge	Intranet	An internal web site-or Intranet-can provide staff with a visually appealing and easy-to-use information resource.
	Video conferencing	Video conferencing works well for situations that require a degree of trust and relationship building, for discussing issues and exploring ideas, and in situations where you don't need a detailed permanent record to be generated automatically.
	Groupware	Organizations use groupware systems when users in workgroups or departments need to communicate and collaborate.
	E-mail	Through e-mail a message can send anytime, anywhere to several people at the same time.
	Story telling	Stories are very effective tool for both capturing and coding tacit knowledge.
	Knowledge portal	Portals create a customized single gateway to a wide and heterogeneous collection of data, information, and knowledge.
	COP	A community of practice is a group of people who share a common concern, a set of problems, or interest in a topic and who come together to fulfill both individual and group goals.
	Story telling	Stories are very effective tool for both capturing and coding tacit knowledge.
Store knowledge	Database Management system	A DBMS is used to create, process, and maintain a database.
	E-mail	Through e-mail a message can send anytime, anywhere to several people at the same time.
	Data Warehousing	Data warehouse is a data structure that optimized for distribution. It gathers and stores united sets of past data from multiple operational systems and nourishes them to one or more data marts.
	Content management	Successful knowledge management implementations appoint knowledge managers or content editors whose job is to evangelize knowledge management processes and to validate and edit content in their area of expertise
	Information technology	IT is now a days becoming more complex and is being familiar among construction organizations as a worthwhile and effective tool for KM.
	Expert Networks	Expert networks provide a forum for people who need to establish knowledge sharing focused on solving a problem
Apply knowledge	Groupware	Organizations use groupware systems when users in workgroups or departments need to communicate and collaborate.
	Decision support system	A DSS is normally formed to support the solution of a particular problem or to appraise an opportunity.
	DMS	A DBMS is used to create, process, and maintain a database.
	MIS	The goal of MIS is to provide the correct information to the appropriate manager at the right, in a useful from.
	Information Technology	IT is now a days becoming more complex and is being familiar among construction organizations as a worthwhile and effective tool for KM.
	Video conference	Video conferencing works well for situations that require a degree of trust and relationship building, for discussing issues and exploring ideas, and in situations where you don't need a detailed permanent record to be generated automatically.
	Story telling	Stories are very effective tool for both capturing and coding tacit knowledge.

Table 2: Knowledge Management technology used by IMC's.

Technology	Company	HH (Mean score)	MS (Mean score)	AT (Mean score)	HM (Mean score)	IT (Mean score)	OC (Mean score)	RB (Mean score)	DH (Mean score)	MP (Mean score)	Over all mean	Rank
Internet		4.04	3.80	4.23	3.98	4.16	4.13	4.18	3.91	4.10	4.06	
Intranet		4.19	4.15	4.21	4.23	3.60	3.98	4.19	4.04	4.26	4.09	
CRM		4.25	4.24	4.30	4.27	3.64	4.11	3.85	4.11	4.14	4.09	
MIS		4.27	4.37	4.64	4.39	3.67	4.24	4.51	4.17	4.42	4.29	
Expert networks		4.29	4.48	4.47	4.26	3.57	4.22	4.46	4.06	4.34	4.23	
Email		4.29	4.50	.00	.21	3.62	4.24	4.55	4.67	4.56	4.35	5
Video conference		4.08	4.35	.00	.21	3.48	4.39	4.72	4.35	4.56	4.27	
Data warehousing		4.06	4.43	.00	.21	3.43	4.17	4.57	4.59	4.36	4.24	
Browser		4.21	4.41	.00	.24	3.55	4.15	4.45	4.65	4.44	4.29	
Content management		4.10	4.46	.00	.19	4.19	4.39	4.45	4.28	4.44	4.34	6
Knowledge portal		4.15	4.52	4.62	.73	4.21	4.46	4.31	4.65	4.42	4.42	1
Data support system		4.06	4.30	4.43	.71	4.22	4.65	4.76	4.37	4.58	4.42	1
Information technology		4.19	4.39	4.34	.74	4.12	4.39	4.37	4.35	4.04	4.30	
E-learning		4.10	4.19	4.19	.66	4.19	4.41	4.37	4.11	4.22	4.22	
Groupware		4.15	4.31	4.47	.60	4.00	4.57	4.60	4.70	4.64	4.39	3
Data Base Management System		4.17	4.46	4.51	.69	4.14	4.57	4.58	4.39	4.52	4.40	2
Community of practices		4.31	4.48	4.49	.74	4.10	4.46	4.45	4.48	4.30	4.38	4
Story telling		4.08	4.44	4.55	.68	4.10	4.43	4.46	4.35	4.46	4.33	7
Company wise position		4 to 5	4 to 5	Nil and 4 to 5	1 to 3	3 to 4	4 to 5	4 to 5	4 to 5	4 to 5		

Table 3: Mean score of Technology adopted by employees.

	HH (Mean Score)	MS (Mean Score)	AT (Mean Score)	HM (Mean Score)	IT (Mean Score)	OC (Mean Score)	RB (Mean Score)	DH (Mean Score)	MP (Mean Score)	Over all Mean	Rank
Internet	1.10	1.30	1.10	1.60	1.20	1.60	1.50	1.30	1.60	1.37	
DW	1.60	1.60	1.50	1.60	1.50	1.60	1.30	1.20	1.30	1.47	6
Intranet	1.50	1.30	1.30	1.60	1.50	1.60	1.50	1.30	2.00	1.51	2
Expert Network	1.60	1.20	1.30	1.60	1.50	1.50	1.30	1.10	1.70	1.42	8
IT	1.60	1.20	1.60	1.60	1.60	1.50	1.50	1.20	1.60	1.49	4
DSS	1.40	1.20	1.40	1.40	1.60	1.50	1.40	1.40	1.60	1.43	7
Groupware	1.10	1.30	1.10	1.20	1.60	1.20	1.40	1.50	1.70	1.34	
DMS	1.50	1.10	1.40	1.30	1.20	1.00	1.40	1.50	1.90	1.37	
E-learning	1.10	1.00	1.10	1.20	1.30	1.0	1.60	1.60	1.60	1.31	
Video conference	1.00	1.20	1.00	1.30	1.40	1.20	1.20	1.10	1.40	1.20	
E-mails	1.20	1.00	1.30	1.10	1.00	1.10	1.00	1.20	1.10	1.11	
Story telling	1.10	1.00	1.20	1.30	1.30	1.20	1.30	1.20	1.60	1.24	
Browser	1.40	1.40	1.50	1.60	1.90	1.70	1.70	1.40	1.70	1.59	1
MIS	1.40	1.40	1.20	1.30	2.00	1.40	1.50	1.10	2.00	1.48	5
Knowledge Portal	1.30	1.10	1.30	1.40	1.30	1.40	1.40	1.00	1.30	1.28	
Content Mgt	1.40	1.50	1.20	1.60	1.70	1.40	1.40	1.10	2.20	1.50	3
CRM	1.50	1.40	1.00	1.70	1.50	1.50	1.40	1.10	2.20	1.48	5

Table 4: Level of usage of KM technology.

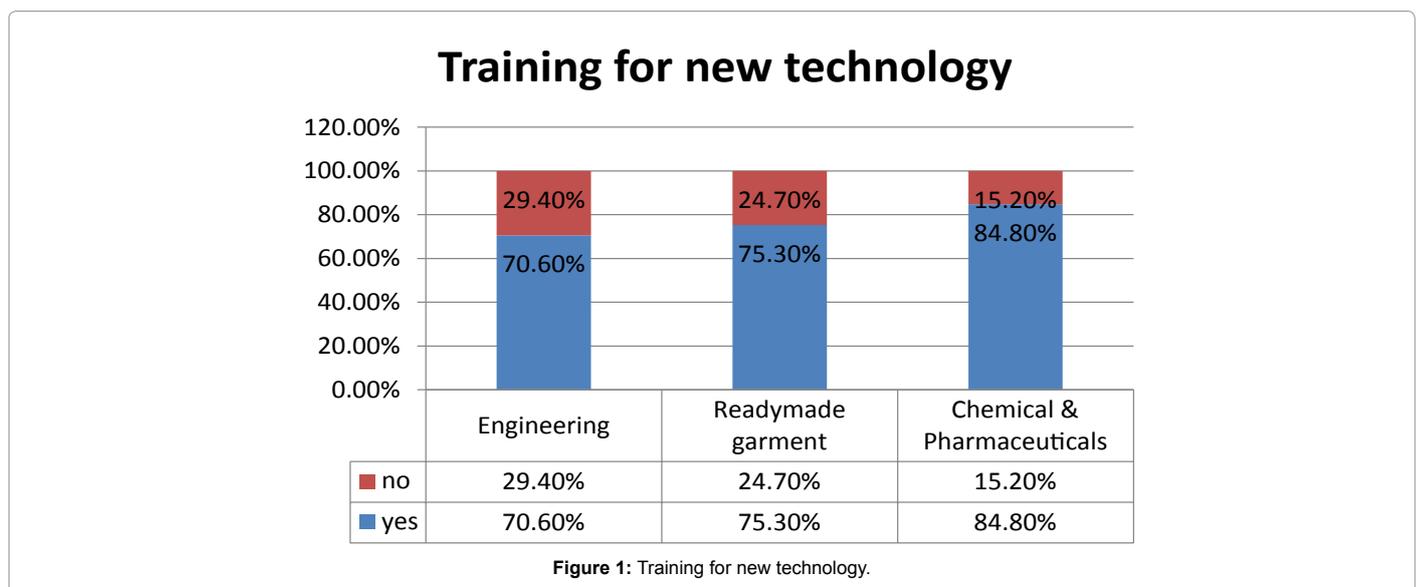


Figure 1: Training for new technology.

for engineering, readymade garment and pharmaceuticals. While the 35.30%, 27.70% and 24.60% respondents refuse to provide such type of training, respectively. Employees were getting a proper training to handle technologies and the time was also sufficient to acquire full knowledge about the uses of that technology. Advancement of technology itself not sufficient for an organization till their employees are not well familiar with that (Figure 2).

All the three industries were providing training for new technologies to take benefits of their physical and human resources. Respondents from all the three industries (engineering (62%), readymade garment (44%) and chemical and pharmaceutical (48%)) think that training provides some help in managing knowledge of knowledge workers. Other respondents think that training is very useful in KM (Figure 3).

Effective knowledge sharing channels in IMC's

Technology is useful in every step of KM process but the main role of technology is sharing knowledge. Many channels are used for sharing knowledge, which are given in Table 5 (Here 5=Very effective

and 1=Not effective. The possible range of scores is 1 to 5 with high scores reflecting high degree of agreement).

There are various channels available for sharing knowledge. Research finding shows that mean score of Email, Instant Messages, video conferencing, intranet, internet and Face to face meeting for all the selected nine manufacturing companies was lied between 3.47 to 4.52 (which means effective score). Companies' employees agreed that all these selected channels are most effective for sharing information. Face to face meeting was most effective from remaining. Instant messaging was little bit less effective and remaining all was effective.

Conclusion

In context to technology, respondents were looking at implementing Internet and Intranet to develop a strong external and internal flow. In context to the current scenario, developing a strong internal information backbone is of primary interest. This resulted in, "Data support systems" and "Data Repository" being the most effective technology helping respondents in managing information. The paper

	HH	MS	AT	HM	IT	OC	RB	DH	MP	OA
FFM	4.90	4.90	4.10	4.90	3.70	4.50	4.50	4.80	4.60	4.52
Intranets	4.00	4.30	3.80	4.20	4.20	4.00	4.00	4.00	4.10	3.92
Emails	4.10	4.00	4.20	4.30	3.60	4.30	4.30	4.00	4.00	4.13
Application sharing	4.10	4.10	4.00	3.90	3.70	3.90	3.90	3.50	3.90	3.92
Conference calls	3.30	3.90	3.60	4.30	4.20	3.70	3.70	3.20	3.70	3.80
Video conference	4.10	4.00	4.00	4.60	4.10	3.60	3.60	3.50	3.70	3.98
Instant messages	3.30	3.40	3.20	3.90	3.60	3.60	3.60	3.50	3.70	3.47

Table 5: Mean score of Knowledge sharing channels.

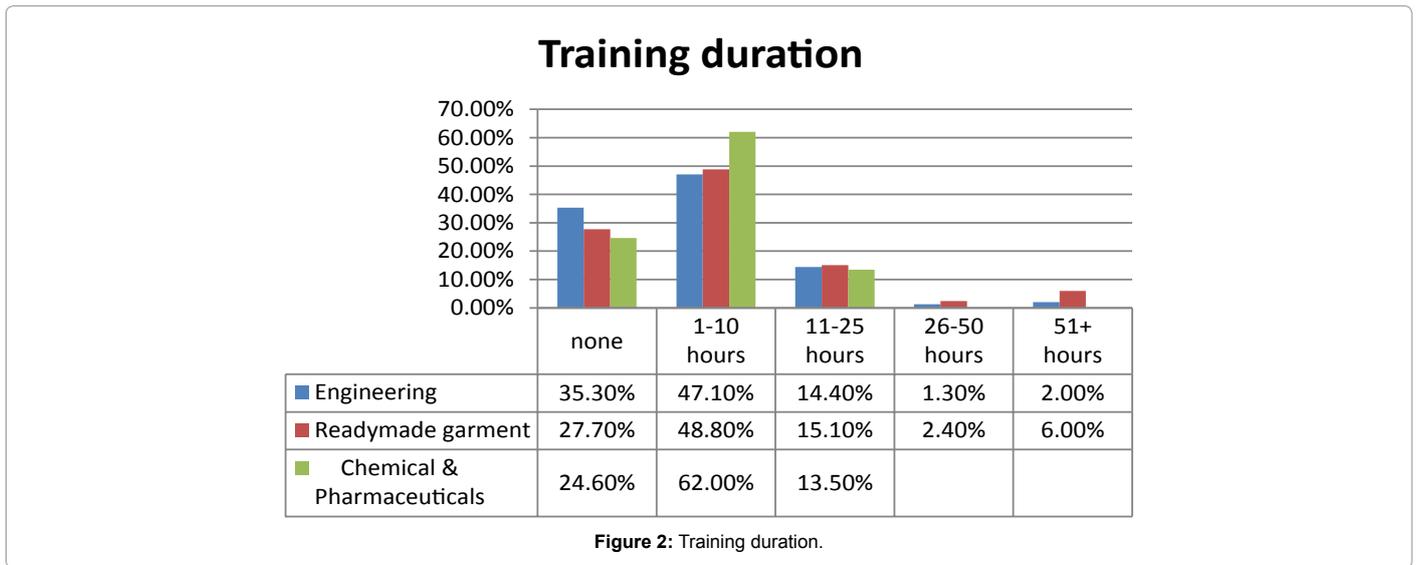


Figure 2: Training duration.

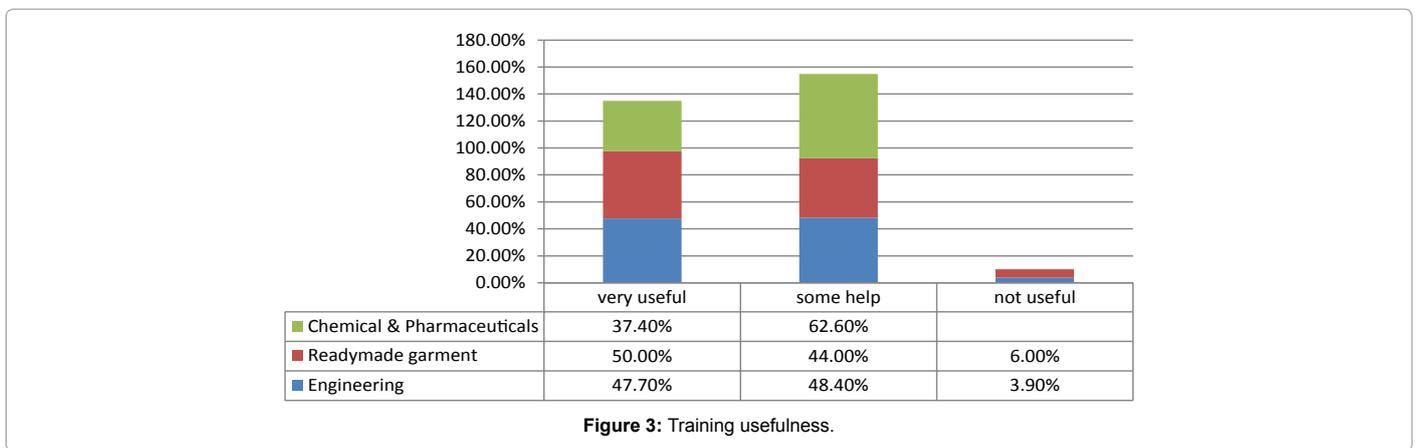


Figure 3: Training usefulness.

results show that Indian manufacturing industry used high technology for managing knowledge and over the next three years they expect increase in their level of usage of these KM tools. Some channels were found most effective in sharing knowledge such as face-to-face meeting and email. As the results reveal, engineering industry and readymade garments industry technology status were high and pharmaceutical industry has a medium technology. IMC'S's were also adopting high technology for sharing and transfer knowledge within and outside the company's boundaries. With the help of some technologies the shared knowledge are stored for future requirement and apply all these stored knowledge to trained new comers or for motivating old one to achieve competitive success. Acquire and create new knowledge is not enough to achieve goals it must be shared and applied for future benefits. Chief knowledge office or human resource management should preferred

face to face meeting, Email, video conference and internet as a effective tools in knowledge sharing.

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