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Knowledge Management & Learning Organizations: A Case Study on Private Computer Training Institutes

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Introduction

Knowledge Management (KM) plays a vital role in maintaining sustainable competitive advantages of organizations in the area of knowledge-driven economy. A study conducted by KPMG in the year 2003 has revealed that 80% of companies in Europe consider knowledge to be a strategic asset. KM involves people, technology and process, all working in cohesion to achieve strategic business goals. From an individual perspective, knowledge is defined as a justified belief that increases an entity's capacity for effective action. It is the information that is relevant, actionable and based on experience in a business context. In the organizational context, KM refers to identifying and leveraging the collective knowledge in an organization for facing the competition. KM focuses on systematic and innovative methods, practices and tools for managing the generation, acquisition, exchange, protection, distribution and utilization of knowledge, intellectual capital and intangible assets. KM as an Information Technology (IT) vertical has provided several solutions with back-end or front-end technology support. The KM cycle consists of six phases. These are undertaking knowledge audits, creating knowledge, capturing knowledge, storing knowledge, using and retrieving knowledge. Various learning organizations both public and private have a positive role in knowledge creation, use and dissemination in different aspects of human civilization and development. The present study has tried to explore the role of Private IT Training Institutes in knowledge development and management for the purpose of adapting the changes in major industries and thereby updating their course curriculum for its own survival.

IT Tools in KM

The IT systems involved in the process of KM mainly, facilitates collaborative work among the users involved in the process of KM and establishes a robust structure for administering the information on which the knowledge to be managed is based. Case Based Reasoning (CBR) can assist in capturing of tacit knowledge from process-centred activities and manage procedural knowledge. Interactive CBR techniques are widely used for knowledge discovery in KM:

i. **Text Mining** involves extracting patterns, behaviours and general knowledge from a large collection textual information, which are found in knowledge repositories. Sound knowledge about Spreadsheet Packages and Database Management Systems is essential in applying text mining.

ii. **Neural Networks** are used to infer patterns from data, knowledge and image. Neural networks are used in a wide variety of applications. They have been used in all facets of business starting from forfeiture, surrender and switchover of insurance policies to automated driving of an unmanned vehicle at 30 miles per hour on smooth roads. In order to adapt such a technology one needs to be proficient in computer networking skills backed by logical reasoning.

iii. **Data Mining** is a process that uses sophisticated statistical analysis and modeling techniques to uncover patterns, correlation and relationships that exist within the data but are not recognizable using conventional data analysis techniques. Data mining provides response to extracted patterns, selection of the right action, learning from past actions, and turning action into business values. Data mining software allows users to analyze large databases to solve business decision problems.

iv. **Online Analytical Processing (OLAP)** have the ability to answer what-if and why questions along with multidimensional views of data, calculation intensive capabilities, and time intelligence.

Artificial Intelligence (AI) is capable of manipulating raw data and producing higher-order information. The main categories of AI that can play a supportive role in the KM process are Expert Systems (ES), Artificial Neural Networks (ANNs), Intelligent Agents and Case-Based Reasoning. The ANNs have been widely used as a tool for solving many decision modeling problems such as prediction of heart disease, blood pressure and sugar. Digital recognition system is an ANN device, which can recognize digits upto 98% accuracy and having its usage in identifying handwritten digits from the scanned input data. The security technologies that are used to preserve knowledge are semantic web and data mining. The aim of semantic web is to create a layer on the existing web that enables advanced automatic processing of the online contents so that data can be shared and filtered by both users and software. It works as a self-describing, machine-readable knowledge, which is accessible using standard web programming constructs. One of the vital roles of information professionals in KM is effective knowledge transfer. Knowledge transfer is referred to the system of sending information or messages from a source to a sink. The information is transferred in the form of bytes or cluster of bytes into groups called packets or datagrams. A set of one or more packets represents a message. When the data is transmitted over the network, the whole message is split into smaller packets and this process is known as packet switching, which allows different communications to be routed simultaneously over the transmission facility. Similarly, a wide number of functions have to be performed in the network environment and it needs a variety of protocols.

A successful knowledge management system should have the ability to:

i. Identify critical knowledge within the organization for retaining and sharing internally as well as externally among the stakeholders using groupware applications like **Lotus Notes** and **Outlook Express**.

ii. Collect, store and organize such critical knowledge in a format and location using **Relational Database Management Systems**.

iii. Facilitate knowledge transfer and retention between users through various multimedia and animation tools like **PowerPoint, Adobe Photoshop, Flash, 3D Max** and so on.

iv. Utilize knowledge to create emerging technologies using computer skills like **Java** and **C++**.

Private IT Training Institutes

There are mainly three streams of IT Education in India viz., Formal University based Courses; Courses offered by Institutions of Higher Learning like the Indian Institute of Science, Indian Statistical Institute and Commercial Training Establishments like Aptech and NIIT. The non-formal sector has over 5,000 training institutions and it is annually growing at the rate of around 20 percent. Our focus in the study is concentrated in the Private IT Training Institutes offering variety of course curriculum for the students, professionals and business class. The major offerings of the IT Education Industry in relation to the non-formal educational institutes are:

i. **Hardware and Networking Training** – The leading institutes in this field are focusing on latest technologies with a recognized certification. The Institutes like IIHT, NIIT, CMC, Webel, Aptech, Brainware are having tie-ups with RedHat, CISCO, Microsoft who are the solution-providers in networking technology. The institutes like St. Xaviers' Computer Centre, IIHT, MicroPro, Webel, Youth Computer Centre, ZedCA, Technolab enhances the hardware skills of the professionals interested to know the assembling, installation and troubleshooting of the computer devices. It helps the students to opt for a career as hardware and networking engineer in the corporate sector.

ii. **Database Training** – Database Management System is a dynamic field of study where there is a demand for expert database administrators in creation, maintenance and security of the information stored in the system. There are various products like Oracle, MS Access, Sybase and Visual FoxPro, which provide database solutions. The institutes, which are offering training in these products, are NIIT, Aptech, SQL Star International, CMC, Webel, Youth Computer Centre, and InfoUniv. The training helps the students to provide solutions in banking, insurance, transportation and tele-communication sectors where there is a huge volume of data and information to be processed efficiently.

iii. **Multimedia Training** – The Animation Industry has expanded its horizons beyond the realms of cartoon films and boldly made its presence felt in fields as diverse as Gaming, Architectural Simulation, Advertising, Web Design, Desktop Publishing and so on. The opportunities for the students opting for multimedia course are to become a graphic designer, webpage developer, content writer, and film editor. The institutes offering such type of courses are ZedCA, Arena Multimedia, Compucom, Webel and Brainware. The students are gaining and making a bright career in multimedia and animation where there is a huge requirement for skilled manpower.

iv. **Training in Computerized Financial Accounting** – In this competitive age, accountants work strategically with both executive and management teams by providing expert financial advice on the impacts of management decisions, compliance and governance and the deployment of systems, resources and processes throughout the company. With the increasing

numbers of Indian and Multinational financial institutions like ING Vysya, ICICI Prudential, Bharti Axa, HDFC Bank, Axis Bank, Religare, India Bulls, Reliance Money entering the market, the fast moving world of finance requires more and more accomplished accounts and finance professionals. A student can apply for manager in accounts and finance or commercial manager or backoffice executive or audit assistant depending on his or her competency in the financial institutions. The reputed institutes offering courses on computerized Financial Accounting are Institute of Computer Accountants, Tally Academy, Webel, St. Xaviers' Computer Centre.

v. **Placement Opportunities** – With a job huge potentiality in the IT Industry, reputed institutes like Arena Multimedia, Institute of Computer Accountants, NIIT, Brainware, CMC are hiring placement executives for proper training of the students, skill development and fulfilling the requirements of the corporate world. Webel has started two finishing schools in Bengal for grooming the Personality and Spoken English of the computer literate students and nurturing them as per industry requirements.

Objectives of the Study

The following are the objectives of the study:

1. **To evaluate the key areas of knowledge development in the computer education sector.**
2. **To explore the computer skills to be delivered by the private training institutes for their survival in relation to job opportunities.**

Research Methodology

The study has been conducted in the State of West Bengal primarily in Kolkata using **Stratified Random Sampling** technique. Out of the 120 private computer training institutes operating from Kolkata, 20% i.e. 24 institutes are considered in the study. There are 36 Consultants comprising of HR managers of IT companies and consultants of Consultancy services organizations considered at random for opinion sharing about various institutes and future prospects of IT Education. The Centre and Regional Managers of the private computer training institutes have stated their views and contributed significantly in briefing about the present market scenario in IT Education. The number of respondent in the Manager category selected at random is 43. Questionnaire Method has been used for primary data collection. The scaling techniques applied in the case study are Likert and Thurstone Case V Analysis. The secondary data has been collected by referring to books, journals and magazines available in the EIILM Kolkata Library, Indian Institute Of Management Kolkata Library, ICFAI National College Kolkata and Bhubaneswar Library, Global Institute of Management Bhubaneswar Library, IISWBM Kolkata Central Library and KIIT University Bhubaneswar Central Library. The Internet has helped immensely in deriving latest technological developments and annual reports of the companies who are into computer education business, available in various websites.

Results & Analysis

Table 1: Thurstone Case V Analysis for Prospective Courses:

Preferred to

Courses	A	B	C	D	E	F	G	H	I
Adjusted R* (Value +0.56)	0.91	0	0.01	0.54	0.36	1.14	0.5	0.48	1.1
Rank	3	9	8	4	7	1	5	6	2

NOTE: The total number of respondent is 43 managers

A: Mobile Communication **B: Robotics** **C: Games Programming**

D: Chip-Level Development **E: Expert System** **F: DBMS**

G: Embedded System **H: Biotechnology** **I: Multimedia & Animation**

According to the Managers, the need for designing **Database Management System (DBMS) courses** is highest, followed by **Multimedia & Animation**, **Mobile Communication**. The prospect of **Chip-Level Development**, **Embedded System** and **Biotechnology** is nearly same. These courses are innovative and requires continuous research and development. **Expert System**, **Games Programming** and **Robotics** are yet to penetrate the job market in West Bengal.

Table 2: Thurstone Case V Analysis for Proposed Plans:

Preferred to

Proposed Plans	A	B	C	D	E
Adjusted R* (Value +0.33)	0.37	0.74	0.49	0	0.05
Rank	3	1	2	5	4

NOTE: The total number of respondent is 43 managers

A: Awareness of Computer Education in semi-urban areas

B: 100% Placement for students

C: On the Job Training

D: Appointing the eligible students as employees within the organization

E: Establishing a research wing for development of Information Technology

Among the **proposed plans** considered for development of an institute, **100% placement** holds the key position in the opinion of managers. The next choice

amongst the managers is **on the job training**. It would definitely increase the demand of courses as offered by the institutes. **Awareness of computer education in semi-urban areas** is vital for attracting illiterates in the field of IT. The next in the priority list of managers are **establishing a research wing for development of IT** and **appointing the eligible students as employees within the organization**.

Consultants' Opinion about Job Opportunities against the following Job Categories:

(A) Computer Operation

Table 3: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
8	10	0	-5	-4

Table 4: Final Score Table

Total Score	Average Score
9	0.25

(B) Technical Support / Office Jobs

Table 5: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
14	15	0	-2	-2

Table 6: Final Score Table

Total Score	Average Score
25	0.69

(C) Networking

Table 7: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
14	20	0	-1	0

Table 8: Final Score Table

Total Score	Average Score
33	0.92

(D) Hardware Maintenance

Table 9: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
16	13	0	-5	-2

Table 10: Final Score Table

Total Score	Average Score
22	0.61

(E) Software Development

Table 11: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
46	9	0	-1	-2

Table 12: Final Score Table

Total Score	Average Score
52	1.44

(F) Multimedia And Animation

Table 13: The Likert Scaling Table

Excellent (+2)	Good (+1)	Moderate (0)	Needs Improvement (-1)	Poor (-2)
26	11	0	-2	-2

Table 14: Final Score Table

Total Score	Average Score
33	0.92

We have applied **Likert Scaling Technique** to explore the market demand for various job categories offered in the IT field. Table 12 shows the average score for **Software Development** is highest and therefore job situation in this category is extremely good. This followed by **Computer Networking** and **Multimedia & Animation** where the average score is calculated in Table 8 and Table 14 respectively. It reflects the job scenario is favourable and having good prospects. Next in the priority of the

consultants is **Technical Support / Office Jobs** whose average score is shown in Table 6, which shows positive job opportunities and is growing steadily. The next most promising category is **Hardware Maintenance**. The average score in Table 10 implies that the job scenario is steadily improving towards positive direction. The least demanding job category in IT is **Computer Operation**, which is having moderate manpower requirement in the market.

In the same manner, the **Likert Analysis** based on Managers' opinion has revealed **Software Development** as the key category where job situation is reasonably good (Average Score = 0.88). This is followed by **Networking** and **Multimedia & Animation** which is quite surprisingly having equal average score of 0.79 each which resembles the Likert average of the Consultants' opinion of 0.92 each. These job categories are growing and are having the potential to establish a good platform for the IT savvy people. This is followed by **Technical Support/ Office Jobs**, **Hardware Maintenance** and **Computer Operation** where the average scores are 0.65, 0.58 and 0.44 respectively, reflects a reasonably moderate sign of prosperity for job seekers in the coming years.

Conclusions

i. From **Table 1**, it can be concluded:

   Database Management System (DBMS) is considered to be the most prospective of the courses that can be offered by the institutes. It is essential because data maintenance and security are the key aspects of any business today. The next most prospective courses are **Mobile Communication**, **Multimedia & Animation**. It has been observed that majority of the population in India is switching to mobile phones rather using the normal landline phones. It is mainly owing to its accessibility, cost-effectiveness and portability. This again has increased the demand for mobile phones and resulted in proliferation of mobile service-providers. The intensely competitive mobile phone market requires highly competent technically sound persons for repairing and maintenance of this unique indispensable device. Multimedia and Animation is considered to be a high value course with heavy pay packages offered by various IT companies. The application areas in multimedia are web-page designing, graphic designing and digital image editing. **Chip-level Development** is also penetrating the computer education owing to intricate designing of integrated chips and requiring high-level understanding of both hardware and software. **Biotechnology** is meant for science graduates who are interested for research and development. **Embedded System** requires high level of proficiency in hardware and software technologies. Both biotechnology and embedded system programmes have been rated below by the faculty members, as it requires specific skillset and not much in demand compared to the courses discussed earlier. **Expert System**, **Games Programming** and **Robotics** are highly advanced concepts and require sound infrastructure and competent faculty members to groom the students. Job opportunities are also very rare in the West Bengal market for persons specializing in these courses.

ii. Every institute must provide **100% Placement Assistance and On the Job Training**, which involves corporate interaction, pre-placement training, vendor certifications etc. as provided by reputed institutes in West Bengal like Webel Informatics Ltd., NIIT and Aptech. The educational houses offering career courses must form a placement cell to identify the manpower needs in various companies and groom the students accordingly **(Table 2).**

iii. Lastly, the three most promising job categories for conducting IT training courses are **Software Development**, **Computer Networking**, and **Multimedia & Animation.** These categories can provide plenty of job opportunities for the students as stated by the managers and consultants associated with computer services industry **(Table 8, 12 & 14)**.

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