P-2974

A STUDY ON EFFECTIVENESS OF KNOWLEDGE MANAGEMENT AT CYBERNET SLASH SUPPORT CORPORATION, COIMBATORE

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A PROJECT REPORT

Submitted to the

FACULTY OF MANAGEMENT STUDIES

in partial fulfillment for the award of the degree

of

MASTER OF BUSINESS ADMINISTRATION

CENTRE FOR DISTANCE EDUCATION

ANNA UNIVERSITY CHENNAI

CHENNAI - 600 025

September, 2009

BONAFIDE CERTIFICATE

Certified that the project report titled "**A Study on effectiveness of Knowledge Management at Cybernet Slash Support Corporation, Coimbatore**" is a bonafide work of **Mr. Murali Krishna .V,** who carried out the work under my supervision. Certified further to the best of my knowledge that the work reported herein does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ACKNOWLEDGEMENT

The successful completion of my project would be inadequate if I failed to mention those who made it achievable.

I express my sincere gratitude to **The Director, Centre for Distance Education, Anna University, Chennai**, who has been the backbone behind every event of the department, and for his constant encouragement in all endeavors.

I would like to thank **Dr. S. Sadasivam, Coordinator, KCT Study Centre, Coimbatore**, who has been a silent source of energy for all the activities undertaken.

My special thanks to **Mr. A. Senthil Kumar, Counselor MBA Programme, KCT Study Centre, Coimbatore**, for his whole hearted support and guidance.

I would like to thank **Prof. Dr. S.V. Devanathan, Project-in-charge, and other members of Project Monitoring Committee, KCT Study Centre, Coimbatore**, for their kind coordination rendered during the project work.

I feel extremely proud and privileged that I completed my project under the guidance of **Mrs. R. Hemanalini, Lecturer, KCT Business School, Kumaraguru College of Technology, Coimbatore**, who spent her quality time to make me understand different ways to approach the research problem.

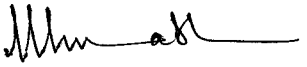
I would like to thank **Mr. Sudarsan Durai, Senior Executive HR, and all the Employees & Staff members of Cybernet Slash Support Corp., Coimbatore**, for their kind cooperation rendered during the data collection phase.

Last but not the least, I would like to thank my **Family** and **Friends** who have always extended their support in successful completion of this project work.

ABSTRACT

On a global basis, organizations are recognizing the importance of knowledge as a means to gain or sustain competitive advantage. Researchers have concluded that the only thing that is sustainable, for successful businesses – is what it knows, how it uses what it knows, and how fast it can know something new. In the past, the dilemma was finding enough information, but now the problem has shifted to identifying and managing the nuggets of mission-critical knowledge. Most organizations, particularly IT and ITES are primarily knowledge-focused. They obtain data and information and produce either a product or service. In this production process they use their own, and other's, knowledge and information. Much of the knowledge in an enterprise is grounded in the minds of employees. Since knowledge is the most basic of all competencies, its recognition, creation, application, and management should be a critical success factor for attainment of a competitive advantage. Hence, organizations must efficiently and effectively create, locate, capture, and share their organization's knowledge and expertise.

Since information builds on data and knowledge builds on both data and information, knowledge management includes all three elements. It does not focus on databases or information technology, although it may use both. Its concern is with managing its knowledge assets: creating, storing and protecting, disseminating and using mission-critical knowledge. This increasingly requires making the organization's knowledge explicit and recording it for easier distribution and reuse. This project work provides a framework for configuring a firm's organizational and technical resources and capabilities to leverage its knowledge.



Signature of the Candidate

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

#	Symbol	Abbreviations
1	ITAA	Information Technology Association of America
2	IT	Information Technology
3	MNC	Multi National Corporation
4	ITES	Information Technology Enabled Services
5	KM	Knowledge Management
6	CSS	Cybernet Slash Support
7	SPSS	Software Package for Statistics and Simulation
8	BPR	Business Process Reengineering

CHAPTER 1 - INTRODUCTION

1.1 Background

This project report contents are designed in a fashion such that, it first describes the general scenario of IT industry, and highlights how India plays an important role in IT sector. Secondly, the most important factor for the sustainability of IT industry - the *Knowledge* and its value in management are cited. A total of 13 cases in IT/ IT based industries are analyzed for the success due to knowledge management. Based on this, a set of 3 objectives are derived - data is collected based on these objectives. The results are then interpreted and the report ends with final conclusion on the summary of findings.

1.1.1 Information Technology (IT) Industry

One of the US industries with highest growth rate in the recent times is the IT industry. The US IT industry comprises of hardware, software and other applied services. The country records 40% of its global spending in the production of IT products and services. Information technology, and the hardware and software associated with the IT industry, are an integral part of nearly every major global industry. Unlike other common industries, the IT industry is knowledge-based. Efficient utilization of skilled labor forces in the IT sector can help an economy achieve a rapid pace of economic growth. The IT industry helps many other sectors in the growth process of the economy including the services and manufacturing sectors.

1.1.2 The role of the IT Industry

The IT industry can serve as a medium of e-governance, as it assures easy accessibility to information. The use of IT in the service sector improves operational efficiency and adds to transparency. It also serves as a medium of skill formation. The IT industry has become one of the most robust industries in the world. IT, more than any other industry or economic facet, has an increased productivity, particularly in the developed world, and therefore is a key driver of global economic growth. Economies of scale and insatiable demand from both consumers and enterprises characterize this rapidly growing sector.

1.2 Indian software Industry

With the growing trend of outsourcing worldwide, India is continuously focusing

quality and low wages, the prime requirements a company searches for; while outsourcing its business processes. This is the reason why India has been successfully able to drive all the big banners to its land and establish itself as the world's biggest software outsourcing destination. Today, India exports software and services to nearly 95 countries around the world, with North America (U.S. & Canada) leading ahead in India's software exports. India regards IT sector as one of its top five priorities.

1.2.1 Indian IT Industry: NASSCOM Analysis

FY 2006-07 witnessed a revalidation of the Indian Information Technology – Business Process Outsourcing (IT-BPO) growth story, driven by a maturing appreciation of India's role and growing importance in global services trade. Industry performance was marked by sustained double-digit revenue growth, steady expansion into newer service-lines and increased geographic penetration, and an unprecedented rise in investments by Multi-national Corporations (MNCs). Positive market unaddressed white-spaces and the unbundling of IT-BPO mega-deals with increasing shares of global delivery, strongly support the optimism of the industry in achieving its aspired target of USD 60 billion in exports by 2010.

USD billion	FY 2004	FY 2005	FY 2006	FY 2007
IT Services	**10.4**	**13.5**	**17.8**	**23.7**
-Exports	7.3	10.0	13.3	18.1
-Domestic	3.1	3.5	4.5	5.6
ITES-BPO	3.4	5.2	7.2	9.5
-Exports	3.1	4.6	6.3	8.3
-Domestic	0.3	0.6	0.9	1.2
Engineering Services and R&D, Software Products	**2.9**	**3.9**	**5.3**	**6.5**
-Exports	2.5	3.1	4.0	4.9
-Domestic	0.4	0.8	1.3	1.6
Total Software and Services Revenues	16.7	22.6	30.3	39.7
Of which, exports are	12.9	17.7	23.6	31.3
Hardware	**5.0**	**5.9**	**7.0**	**8.2**
Total IT Industry (including Hardware)	**21.6**	**28.4**	**37.4**	**47.8**

**Total may not match due to rounding off*
**NASSCOM estimates have been reclassified to provide greater granularity*
– *Historical values for a few segments have changed due to availability of updated information*

1.3 About CSS

Figure 1.1 CSS Logo

Cybernet Slash Support (CSS) is a global technology solutions provider to enterprises, consumers & technology companies. CSS follows a support-centric model to all its services that help its clients leverage IT to align business objectives. CSS manages four centers of excellence that create solutions for specific industry needs through a combination of its strategic assets - people, process and technology. Using a proven and cost-effective global delivery model, CSS manages technology, infrastructure, platforms and applications for Fortune 2000 companies, and provides 24x7 support solutions for leading enterprise, consumer and technology vendors.

In today's dynamic marketplace, IT is the only tool for transformation. Collaborating with a "RIGHT FIT" partner can ensure return on technology investments and strengthen the business for future challenges as well. CSS's holistic and diverse solutions coupled with experienced talent force helps achieve this.

Headquartered in San Jose, CA, CSS is backed by leading financial institutions including SAIF partners, Goldman Sachs and Sierra Ventures. CSS's corporate mission of 100% referenceable customers translates into the operational goal of 100% referenceable transactions. As a result, CSS's primary target is to help maximize customer satisfaction, software quality, availability and reliability while managing costs and risks for global clients. This relentless client focus and compelling value proposition ensures that all customers willingly vouch for them.

1.4 Knowledge Management

Knowledge management is the hottest subject of the day. What is this activity called knowledge management, and why is it so important to each and every one of us? The answers for these questions are described in the following sequence.

1.4.1 Knowledge

Knowledge is the full utilization of information and data, coupled with the potential

competitive advantage. Knowledge is more relevant to sustained business than capital, labor or land. Nevertheless, it remains the most neglected asset. It is more than justified true belief and is essential for action, performance and adoption. Knowledge provides the ability to respond to novel situations. A holistic view considers knowledge to be present in ideas, judgments, talents, root causes, relationships, perspectives and concepts. Knowledge is stored in the individual brain or encoded in organizational processes, documents, products, services, facilities and systems. Knowledge is the basis for, and the driver of, post-industrial economy. Knowledge is the result of learning which provides the only sustainable competitive advantage. Knowledge is action, focused innovation, pooled expertise, special relationships and alliances. Knowledge is value-added behavior and activities. For knowledge to be of value it must be focused, current, tested and shared. Anomaly between data, information, knowledge and wisdom may be as follows:

- A collection of data is information.
- A collection of information is knowledge.
- A collection of knowledge is wisdom.
- A collection of wisdom is truth.

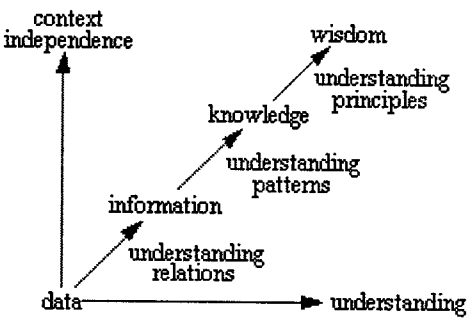


***Figure 1.2** Knowledge from data through wisdom*

In an organizational context, data represents facts or values of results, and relations between data and other relations have the capacity to represent information. Patterns of relations of data and information and other patterns have the capacity to represent knowledge. For the representation to be of any utility it must be understood, and when understood the representation is information or knowledge to the one that understands.

Without associations we have little chance of understanding anything. We understand things based on the associations we are able to discern. If someone says that

quarters, then we can say that the sales are now about $207,000 per quarter. Yet, if someone asks what sales are apt to be next quarter, then the probable answer is, "It depends!" Although we have the data and information, we do not have sufficient knowledge. To be able to estimate the sales for next quarter, we would need information about the competition, market size, extent of market saturation, current backlog, customer satisfaction levels associated with current product delivery, current production capacity, the extent of capacity utilization, and a whole host of other things. With sufficient data and information to form a complete pattern, we would have knowledge, and would then be somewhat comfortable estimating the sales for next quarter. So, in summary the following associations can reasonably be made:

- Information relates to description, definition, or perspective (what, who, when, where).
- Knowledge comprises strategy, practice, method, or approach (how).
- Wisdom embodies principle, insight, moral, or archetype (why).

1.4.2 The Value of Knowledge Management

The value of Knowledge Management relates directly to the effectiveness with which the managed knowledge enables the members of the organization to deal with today's situations and effectively envision and create their future. Without on-demand access to managed knowledge, every situation is addressed based on what the individual or group brings to the situation with them. With on-demand access to managed knowledge, every situation is addressed with the sum total of everything anyone in the organization has ever learned about a situation of a similar nature.

Why do we need to manage knowledge? Ann Macintosh of the Artificial Intelligence Applications Institute (University of Edinburgh) has written a "Position Paper on Knowledge Asset Management" that identifies some of the specific business factors, including:

- Marketplaces are increasingly competitive and the rate of innovation is rising.
- Reductions in staffing create a need to replace informal knowledge with formal methods.
- Competitive pressures reduce the size of the work force that holds valuable business knowledge.

- Early retirements and increasing mobility of the work force lead to loss of knowledge.
- There is a need to manage increasing complexity as small operating companies are trans-national sourcing operations.
- Changes in strategic direction may result in the loss of knowledge in a specific area.

In brief, knowledge and information have become the medium in which business problems occur. As a result, managing knowledge represents the primary opportunity for achieving substantial savings, significant improvements in human performance, and competitive advantage. Small companies need formal approaches to knowledge management even more, because they don't have the market leverage, inertia, and resources that big companies do. They have to be much more flexible, more responsive, and more "right" (make better decisions) — because even small mistakes can be fatal to them.

1.4.3 Business strategies related to knowledge management

Knowledge Management has close connections with several well-known management strategies, practices, and business issues, including

- Change management
- Best practices
- Risk management
- Benchmarking
- Business Process Reengineering (BPR)

There is a common thread among these and many other recent business strategies: "recognition that information and knowledge are corporate assets, and that businesses need strategies, policies, and tools to manage those assets." The need to manage knowledge seems obvious, and discussions of intellectual capital have proliferated, but few businesses have acted on that understanding. Where companies have take action — and a growing number are doing so — implementations of "knowledge management" may range from technology-driven methods of accessing, controlling, and delivering information to massive efforts to change corporate culture. The various business implications of Knowledge Management are:

- A knowledge management portal provides 24x7 access to ALL recorded knowledge, information and data about customers, prospects, employees, partners

- A knowledge management system promotes getting a good understanding of the knowledge, information, and data needs of employees.
- Knowledge management mitigates or eliminates the risks associated with attrition.
- Knowledge management involves stewards (those accountable for knowledge) in the daily use of their knowledge and in daily activities.
- The implementation of a knowledge management system promotes many "healthy" business activities including:
    - The recording of knowledge artifacts
    - Quality management of knowledge
    - Leveraging lessons learned from past decisions and experiences
    - The sharing of best practices and the building of consistent processes

1.5 Problem Identified for Study

Although knowledge management is becoming widely accepted, a few organizations today are fully capable of developing and leveraging critical organizational knowledge to improve their performance. Many organizations have become so complex that their knowledge is fragmented, difficult to locate and share, and therefore redundant, inconsistent or not used at all. In today's environment of rapid change and technological discontinuity, even knowledge and expertise that can be shared is often quickly made obsolete. However, while everyone calls for effectively managing knowledge, almost no research has been done regarding how to do it. Hence, the problem identified for the research is to study on the effectiveness of Knowledge management practices being currently followed at CSS Corporation, Coimbatore.

1.6 Need for Study

KM is one of the major areas of concentration for retention of existing business, by providing quick, most suitable and feasible solution for a problem through existing knowledge within the organization. Hence, this project conducted to validate the effectiveness of its usage at CSS. This study is very much essential to address a few of the queries below, pertaining to knowledge management in a firm (or) organization.

- How to configure a firm's resources and capabilities to leverage its codified knowledge?
- What are the characteristics of explicitly codified knowledge and how should

- What role should information technology play?
- How are organizational capabilities and information technology best integrated and applied to managing knowledge?
- What lessons have companies learned in these endeavors?

1.7 Objectives

- To assess how effectively KM is utilized at CSS.
- To identify the backlogs, hindrances in implementing KM at CSS.
- To propose effective measures to overcome the problems of implementation of KM at CSS.

1.8 Scope

The scope of the projects limits with the research of effective usage of KM at CSS, identify the problems in the utilization of KM and to propose suitable measures to overcome those problems. The implementation of the solutions provided on the problem or any post activities after proposing solutions for the problems is purely out of scope of this project.

1.9 Deliverables

- A report of the effective utilization of KM @ CSS
- Proactive measures to be incorporated to overcome problems of KM @ CSS
- Educate employees of CSS about KM and its importance
- Help management in deciding on course of actions pertaining to KM in near future

CHAPTER 2 - LITERATURE SURVEY

2.1 Review of Literature

The following cases have been dealt in detail for this project work on KM.

2.1.1 CRM/KM initiatives at 3M[1]

2.1.1.1 Objective

- Understand why large and diversified companies with diverse product portfolios need to introduce sophisticated technologies to provide efficient and effective customer service.

2.1.1.2 Methodology

With 3M's product portfolio becoming increasingly complicated, the agents at its call-centers were finding it difficult to answer customer queries satisfactorily. This acted as the trigger for 3M's decision to implement the RARS and CRM. The company identified the two main issues the new system had to address: reducing training time and abandon rates and improving solution accuracy and problem resolution speed. The first step towards the CRM/KM implementation at 3M was the creation of a 14-member task force for exploring available technology options. The task force comprised 3M's customer service managers, call center agents, IT analysts and documentation developers. After evaluating various software's available, the task force decided to implement the 'Remedy Action Request System (RARS)' developed by Remedy Corp. RARS was selected for two reasons: it could be easily integrated with many leading knowledge management solution products, and it did not require additional programming before implementation.

2.1.1.3 Conclusion

Enthused by the success of the CRM/KM solution, 3M decided to implement it throughout the organization. The company's human resources, purchasing and procurement departments were the first ones to adopt the technology to help answer questions posed by employees and business partners. The company made the knowledge base available for internal self-service through a corporate intranet.

2.1.1.4 Inference

This case reveals that 3M since its foundation did not had any KM measures incorporated to effectively satisfy customer needs. It has now recognized the importance of

managing knowledge to effectively provide services to its customers and had implemented various KM practices across its organization.

2.1.2 KM Initiatives at IBM[2]

2.1.2.1 Objective

- Understand the importance of knowledge management in enhancing the competence of an organization.

2.1.2.2 Methodology

IBM's KM initiatives date back to the early 1990s, when the company was reorganized under Louis Gerstner (Gerstner). Before that, the company was running as silos due to which information sharing was limited. Gerstner included information sharing as one of the parameters in performance appraisal system to determine compensation. IBM's initial efforts in managing knowledge focused on providing information about co-workers and work to enable reuse of the same. This effort started with asset reuse program, which was formalized as Intellectual Capital Management program. The next stage in the evolution of KM at IBM was Communities of Practice, which were self organized communities, through which employees with similar job functions and interests came together. IBM used several tools like K Portal, ICM AssetWeb, On Demand Workplace, Blue Pages, and Collaboration Forums, to capture, share and manage knowledge.

2.1.2.3 Conclusion

KM helped IBM in increasing efficiency by the reuse of captured assets and by the transfer of knowledge to improve the skills of employees and also brought in the employees across time and geographic boundaries to share ideas.

2.1.2.4 Inference

IBM had utilized KM in an effective way. Primarily, KM is used to share the knowledge gained by individuals between themselves. It's a kind of sharing the tacit knowledge (unstated knowledge) within the individuals. A considerable number of community portals also facilitated for better dissemination of knowledge among the organization.

2.1.3 KM Practices at Toyota Motors[3]

2.1.3.1 Objective

- Examine the KM practices adopted by a large and successful company.

2.1.3.2 Methodology

Most experts believed that successful Knowledge Management (KM) had given Toyota a keen competitive edge. Toyota's Production System (TPS) manufactured a variety of high-quality vehicles at very low cost. Toyota had been extremely open about its TPS. Company sources were quoted to have said, "Study us all you want". Still no other company was able to match Toyota's production system despite decades of effort.

2.1.3.3 Conclusion

Toyota's success in both the local and global markets was based on its gaining a competitive advantage through implementation of innovative and path-breaking ideas on its production floors.

2.1.3.4 Inference

The effective usage of KM has given Toyota a better edge over its competitors. It is with its KM initiatives, able to beat the world's top luxury cars and win new markets.

2.1.4 KM at Tata Steel[4]

2.1.4.1 Objective

- How the knowledge present within a system can be harnessed to yield major benefits to the organization as well as to the people within it.

2.1.4.2 Methodology

In the late 1990s, Tata Steel began to introduce knowledge management initiatives in the company. It started with a small group of people from within the organization. The group formed a "knowledge repository", where all the employees shared their experiences and knowledge. One year after the knowledge repository was formed, the company formed "knowledge communities", which was a platform for like-minded people to meet and share their experiences. In 2001, Tata Steel developed a "KM index" to evaluate the performance of individual employee in the KM initiative. Later, it linked performance evaluation to KM and used a balanced scorecard to monitor the performance of individual employees, divisions, as well as the organization as a whole, in KM.

2.1.4.3 Conclusion

Tata Steel plans to link e-learning with the KM repository and KM communities, devise an intellectual capital index, network with retired employees, and develop employee skills for better externalization of knowledge and integration with the customer's knowledge.

2.1.4.4 Inference

Tata Steel has linked KM activities of employees with performance appraisal. It paved the way for effective dissemination of knowledge between workers. Since the processes involved at Tata Steel involves high knowledge on it, it is with the help of KM, Tata Steel was able to achieve its success.

2.1.5 KM at Xerox Corporation[5]

2.1.5.1 Objective

- To study how the knowledge present within a system can be harnessed to yield major benefits to the organization as well as to the people within it.

2.1.5.2 Methodology

Xerox Corp officially came into existence in 1961 after Haloid changed its name to reflect its core business. Over the decades, Xerox diversified into a number of other businesses, some of which added value to its business model and others which had to be liquidated. In the mid-1990s, the company repositioned itself as the 'Document Company', to better reflect its core business. The knowledge management movement of the 1990s prompted the company to focus on knowledge sharing initiatives. It started "Eureka" which captured the tips shared informally by the company's service reps and created a database of tips that could be accessed by reps all over the world.

2.1.5.3 Conclusion

Although Xerox began making conscious efforts to position itself as a knowledge company in the 21st century, analysts believed that it was a knowledge company since its inception.

2.1.5.4 Inference

Xerox is a knowledge based company since its inception. Basically it positioned itself as a Document Company. It has established a brand across the world, to an extent that

it replaced the word photocopying from dictionary with its name. This state Xerox was able to achieve by incorporating effective KM measures within the company.

2.1.6 Infosys' KM Initiatives[6]

2.1.6.1 Objectives

- Study the implementation of KM initiatives in a large IT organization.
- Evaluate different service and industry practices in software industry.

2.1.6.2 Methodology

Since its inception, Infosys gave importance to learning in the organization. Its efforts to assimilate and distribute knowledge within the company began with the establishment of Education and Research Department in the year 1991. The department began gathering content and knowledge that was available within the organization and the scope of the department grew with the launch of intranet. A full fledged KM program began in 1999 with the launch of Kshop. Through Kshop, knowledge generated in each project across the global operations of Infosys was captured. By 2005, Infosys had highly sophisticated KM systems in place. Uniformity of data was maintained across the DCs (Data Centers) of Infosys worldwide. All the centers could access real time data. The centralized KM system in Infosys was accessible to all Infosys employees, from any of its DCs.

2.1.6.3 Conclusion

According to an internal survey on a sample of 2,700 employees conducted in Infosys in 2003, 80% of the projects managers believed that the performance of their team, including quality of work and productivity improved as a result of KM systems.

2.1.6.4 Inference

Infosys provides software solutions for big corporate overseas. It mainly depends on Technology to develop most appropriate and suitable software to provide business solutions. Hence, KM measures became inevitable at Infosys. Due to large information available, information overloaded and what is needed could not be retrieved from KM repository even though all solutions are present in it.

2.1.7 KM initiatives at British Petroleum[7]

2.1.7.1 Objective

- To understand the KM tools and techniques adopted by a company successful in its KM initiatives

2.1.7.2 Methodology

By the end of 2001, the UK-based British Petroleum Plc (BP) had successfully implemented the emission trading system (ETS) in all units of the company. The ETS enabled BP to reduce the harmful emission of two gases - carbon dioxide and methane - in a cost-effective way. The company used advanced knowledge management (KM) applications such as internal electronic markets (IEM). By March 2002, due to ETS, BP could reduce the quantum of emissions from all its business units by 10%. In December 1994, BP launched the Virtual Teamwork Project (VTP), its first major knowledge management (KM) initiative. Later the company launched a series of KM initiatives, which yielded excellent financial results for its business operations. Following the successful implementation of VTP, BP launched various KM tools such as Peer Assist, After Action Review, BP Connect, Retrospect and Human portal.

2.1.7.3 Conclusion

BP became one of the first few companies to treat KM as a separate discipline when it established a Knowledge Management Team (KMT) in 1997.

2.1.7.4 Inference

KM at BP has helped to reduce the emission of harmful gases in one of its systems. It introduced various KM tools to its employees to ease their work.

2.1.8 Knowledge Sharing Initiatives at World Bank[8]

2.1.8.1 Objective

- To study the knowledge sharing initiative of a large organization with global operations.

2.1.8.2 Methodology

In October 1996, James Wolfensohn, the newly appointed president of the World Bank, announced that the organization would transform itself into a 'knowledge bank'. By early 2000s, the World Bank had already emerged as one of the foremost knowledge

organizations in the world. It was one of the few non-commercial organizations to invest in knowledge management in a major way. By harnessing the vast amount of knowledge present across the organization and making it readily available to all employees and clients, the World Bank created a global knowledge community. Knowledge moved seamlessly across the world to make the work involved in poverty elimination and economic development (the Bank's primary objectives) faster and more effective.

2.1.8.3 Conclusion

The World Bank was generally applauded for its success in making knowledge sharing an integral part of its operations.

2.1.8.4 Inference

Since its inception, the World Bank was considered as a knowledge bank. It had knowledge sharing an integral part of its operations which led to its success in operations.

2.1.9 Mckinsey's Knowledge Management Practices[9]

2.1.9.1 Objective

- Evaluate the ways in which knowledge can be shared and disseminated in the organization.

2.1.9.2 Methodology

Managing knowledge effectively is of prime importance especially for consultancies like McKinsey which depended heavily on knowledge for their existence and growth. The expertise McKinsey gained over the years was put into optimal use through knowledge management. Knowledge was spread in the firm through training sessions, seminars, workshops, sharing of the findings of the projects. The other KM efforts that McKinsey undertook included development of centers of competence, practice information system, practice development network and knowledge resource directory. In McKinsey, the KM system evolved from the need to connect people effectively. The company generally dealt with high level management problems that were difficult to put across in standardized formats.

2.1.9.3 Conclusion

Knowledge management helped McKinsey in solving the clients' problems effectively through every step.

2.1.9.4 Inference

Although McKinsey felt that documentation of its ideas would be copied by its competitors, for effective knowledge sharing across all its employees it introduced various KM tools.

2.1.10 Knowledge Management Initiatives at TCS[10]

2.1.10.1 Objective

- KM implementation at TCS.

2.1.10.2 Methodology

The expertise TCS has gained over the years was put into optimal use through its KM initiatives. TCS was renowned for its 'Web of Participation' structure which combined industry practices with service practices. The concept of KM was introduced in TCS in 1995 and the framework for it was defined in 1996. The framework identified the KM components in the business and assessed the culture in TCS to determine its readiness to adopt KM initiatives. Continuous additions were made to the mammoth workforce in TCS. This presented a challenge in terms of aligning and integrating these people into the system. However, the structured business processes followed in TCS helped in the process. TCS came up with the concept of Community of Practices (CoPs) in 1980s, when it had around thousand employees. Later, online platforms were used to form CoPs. TCS encouraged conversations between teams across the organization, located in different time zones. The knowledge gained by TCS in nearly four decades of association with global players was distributed to the customers through its Web of Participation structure. With wide knowledge about different industry verticals, TCS was able to provide innovative end-to-end solutions to develop and deliver knowledge-based products.

2.1.10.3 Conclusion

According to analysts, KM could be cited as one of the reasons that made TCS one of the most profitable IT companies in the world. The company successfully implemented the offshore delivery model, which was subsequently adopted by several other companies.

2.1.10.4 Inference

TCS provides software solutions for big corporate overseas. It mainly depends on Technology to develop most appropriate and suitable software to provide business solutions. Hence, KM measures became inevitable at TCS.

2.1.11 e-Learning Initiatives at Motorola[11]

2.1.11.1 Objectives

- Understand the advantages of the Self-Directed Learning approach at Motorola.
- Analyze the impact of technology on the training and development efforts of a company.

2.1.11.2 Methodology

At the US-based Motorola Inc. (Motorola), one of the largest providers of wireless, broadband and automotive communications, semiconductors, and advanced electronics products and services in the world, learning has always been an imperative. Right from the year of its inception in 1928, the company encouraged learning by employees. Training helped Motorola to achieve better results. However, it was difficult for MU (Motorola University) to train employees in different locations across the world. The cost of imparting traditional classroom learning was also high. To overcome these problems, Motorola introduced Self Directed Learning (SDL) into its training strategy. E-Learning helped the company to maintain consistency in course delivery across all its facilities around the world at reduced costs. To increase user acceptance, MU devised a 'Learning Guide' that assisted employees in case of any difficulty faced while taking e-learning courses. The guide acted as a personal assistant to employees offering assistance through electronic messages.

2.1.11.3 Conclusion

After integrating e-learning into its corporate training strategy, Motorola decided to make learning available on handheld devices such as mobiles and PDAs in 2002. The aim was to deliver information to employees, just-in-time, when the employee needed them.

2.1.11.4 Inference

Motorola introduced e-learning program as a KM initiative by which the employee he himself will be able to get trained, understand and gain knowledge. Also, it is a good practice that Motorola had kept a user guide along with e-learning so as to facilitate how to

move ahead with e-learning. This is one of the finest way of disseminating knowledge in Knowledge Management.

2.1.12 The Siemens ICN Knowledge Management[12]

2.1.12.1 Objective

- To study how massive changes in the business environment drive the need for knowledge networking

2.1.12.2 Methodology

ICN/ICM ShareNet is a community of around 18,000 sales, marketing, business development and research and developments people of Siemens ICN and ICM, active in more than 80 countries on all continents. ShareNet networks these experts globally and lets them share and develop their knowledge in order to create better customer solutions. The goal is to detect local innovations and leverage them on a global scale. As ShareNet works independent of time zones and organizational boundaries, members usually get answers within a few hours. ShareNet provides real life experience knowledge of sales projects and tested customer solution modules ready for application in similar circumstances. It thus saves precious time in all phases of the sales value creation process, in the preparation of an offer, in the negotiation phase and in the implementation of the network. By making innovative customer solutions visible throughout the organization, they are re-used in other countries or with other customers, thus generating new income streams.

2.1.12.3 Conclusion

Success stories from actual sales project that highlight these benefits are systematically collated and published on the website.

2.1.12.4 Inference

The usage of KM in the means of ShareNet portal is the business way of Siemens to achieve business excellence. By pressing in a query in the ShareNet, the employees were able to get quick solutions for their queries which saved a lot of time and material. Hence, the customers were satisfied and continued their business. Siemens is now able to detect new trends and developments in both technology and customer requirements earlier for the benefit of the customer with the help of ShareNet.

2.1.13 KM The Boygues Telecom Way[13]

2.1.13.1 Objective

- To understand the importance of Knowledge Management in Telecom field

2.1.13.2 Methodology

With a large size, Bouygues Telecom was struggling to manage the flow of information and know-how across the organization. At the end of 2000, Bouygues Telecom launched an initiative aimed at maximizing the value of its business and employee intelligence. CPS (Computer Planning Strategy) Division is responsible for researching new technology and then ensuring rapid implementation of the solutions that best support the company's business objectives. It was formed to track and research new technologies and then validate them before they go live in any part of the business. The knowledge base was used for accelerating the movement of new technology from the CPS management to operational divisions. All technical documents are classified, and each event in the knowledge base can be traced. No time is wasted searching for documents and the CPS can make full use of acquired knowledge to develop innovative new information system strategies. The success of the CPS project has generated interest in additional knowledge management solutions.

2.1.13.3 Conclusion

Bouygues Telecom has overcome the main obstacle to knowledge management success – end-user resistance with a light use of change management. By setting up focused, effective projects that deliver impressive and immediate results, Bouygues Telecom has managed to make its knowledge management vision reality.

2.1.13.4 Inference

Bouygues approach for implementing Knowledge management in its organization is unique. It first identified the need for KM system, implement knowledge base, develop KM system and realize practical success. The best thing we would learn here is that the speed at which the systems were deployed for use. It was very rapid and within a short-term the projects were developed and brought into use.

CHAPTER 3 - METHODOLOGY

3.1 Type of Project

This project falls under the type of "Exploratory Type" where in the existing procedures followed at CSS are being explored and validated for its effectiveness. The study also falls under "Survey type" in a perspective that "survey" is used as a data collection method.

3.2 Target Respondents

The target respondents are the employees of CSS. The employees are split into lower level employees (associates), middle level employees (leads) and the higher level employees (managers) and are reached out.

3.3 Assumptions, Constraints & Limitations

Any study is subjected to constraints like time, effort, cost etc., Hence this study do have the following limitations and constraints.

- The employees have disclosed all the information honestly and correctly without any bias.
- The company was not able to divulge certain confidential information like the employee name, CTC, exact figures of the costs involved in any project of each business unit, etc.
- The staff might not disclose all the details as they may be fearful of their superiors.

3.4 Sampling Method

A total of 120 employees are working at CSS, Coimbatore centre; everyone is considered to be a sample and is reached out. Hence, *Census* method is used for data collection.

3.5 Data Collection Methodology

The primary data collection is through *questionnaire*. An Intranet website is created for the sole purpose of data collection at CSS. It consists of two pages:

- Home page
- Questionnaire page

3.5.1 Home Page

Home page briefs about CSS and what this site is for. Also, it briefs about "Knowledge Management" with a short description. By clicking on the button "*Click here to take up the Survey*" at the bottom of the page, the user will be redirected to questionnaire page, where he/she can take up the survey.

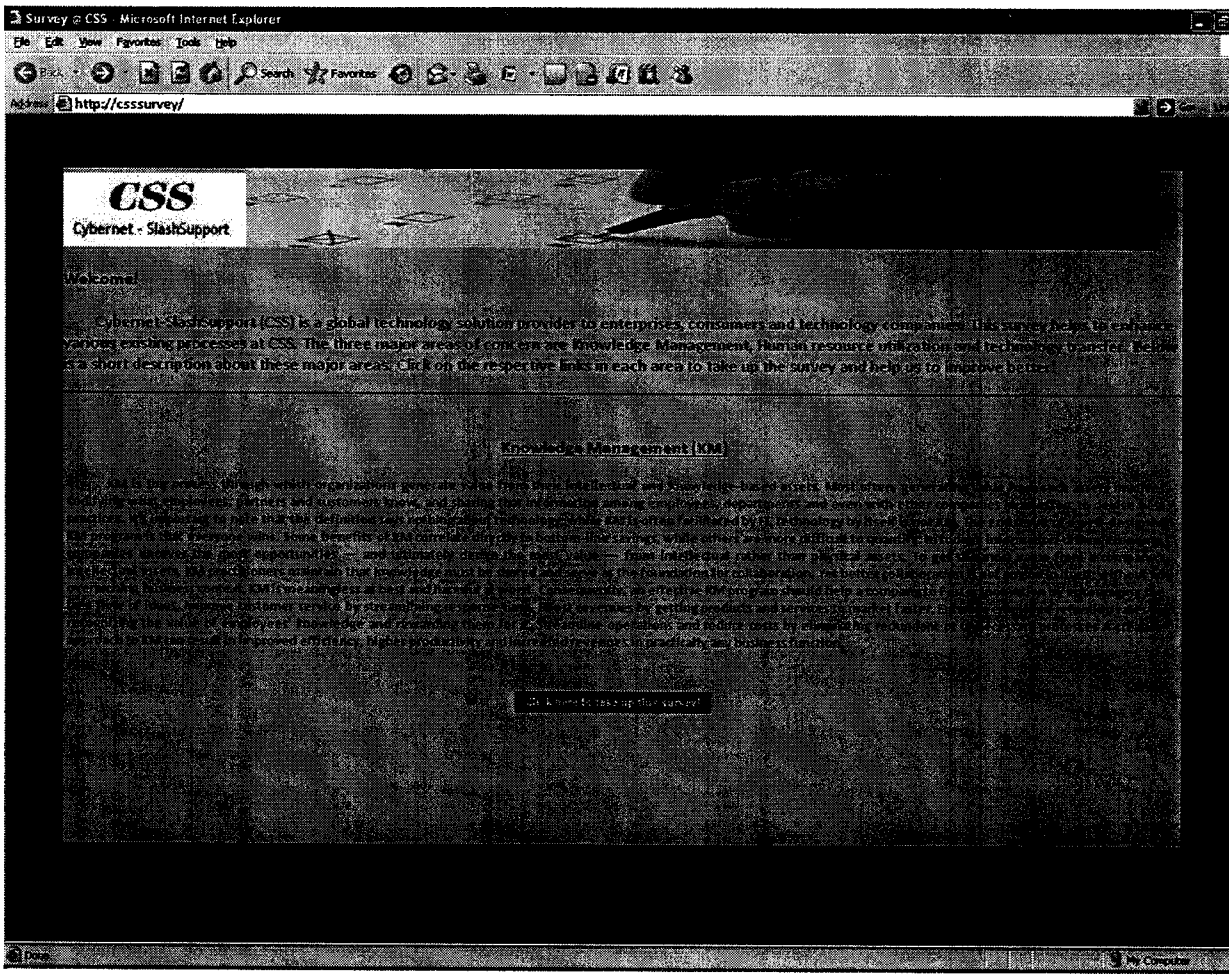


Figure 3.1 *Intranet Website Home page*

3.5.2 Questionnaire Page

The questionnaire page will look like the one shown below. This page is designed in an elegant and easy way such that the user feels at ease in taking up the survey. By just with a mouse click, he can take up the questions right at his desktop. The questions being presented are focused to the problem and are organized in such a way that might not be misleading the user.

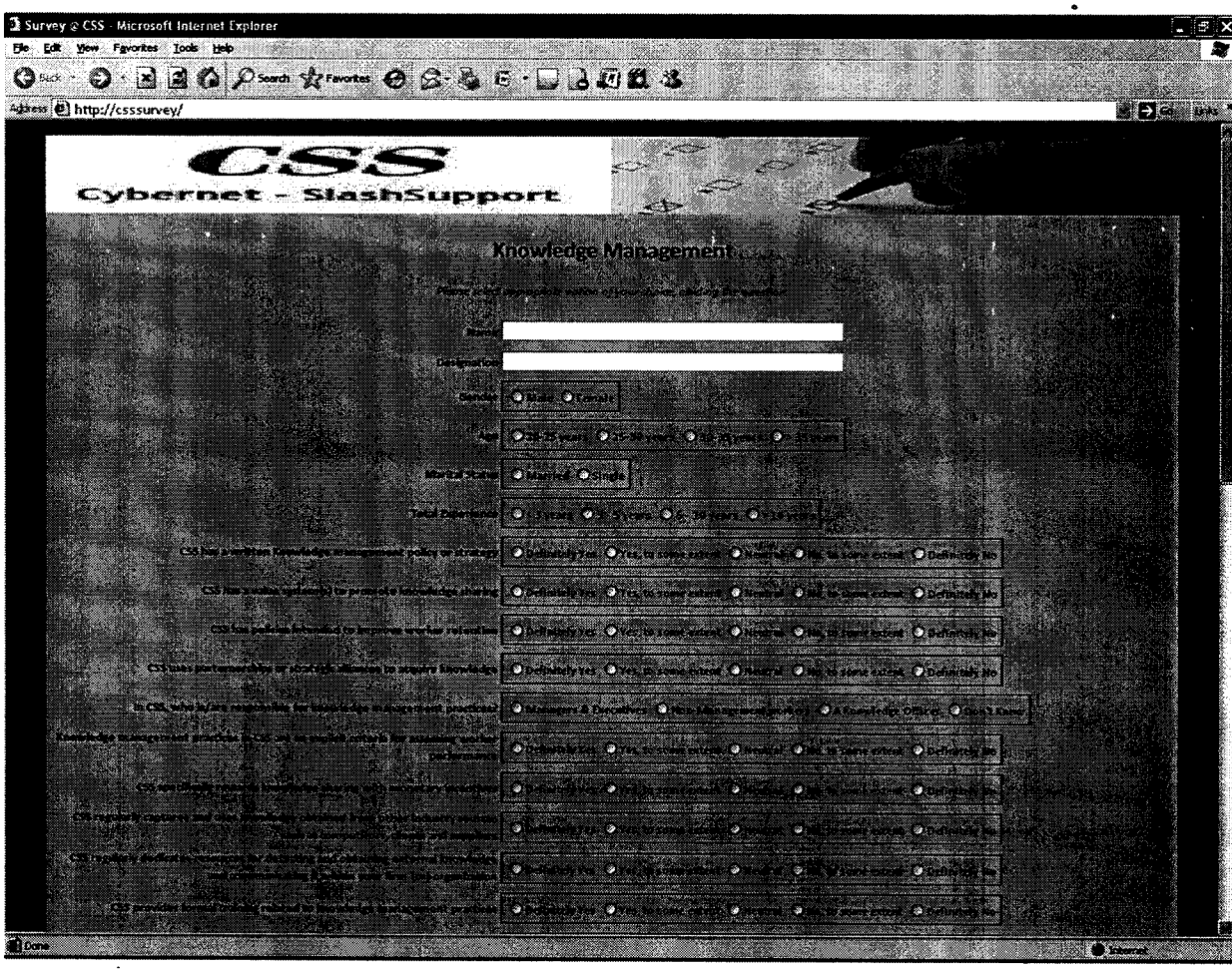


***Figure 3.2** Intranet Website Questionnaire page (View I)*

Once, the respondent is done with answering the questions, he/she can click at the button "*Submit the Response*" at the bottom of the page. Once clicked, the responses are stored in a database and he/she will be redirected to the home page. In case if any of the questions are left blank / unanswered, upon clicking the button, the corresponding questions will be highlighted in RED with a message stating, "*Questions highlighted in red are unanswered. Please complete them before submitting the response.*" The user has to fill up the missed out questions and resubmit the answers.

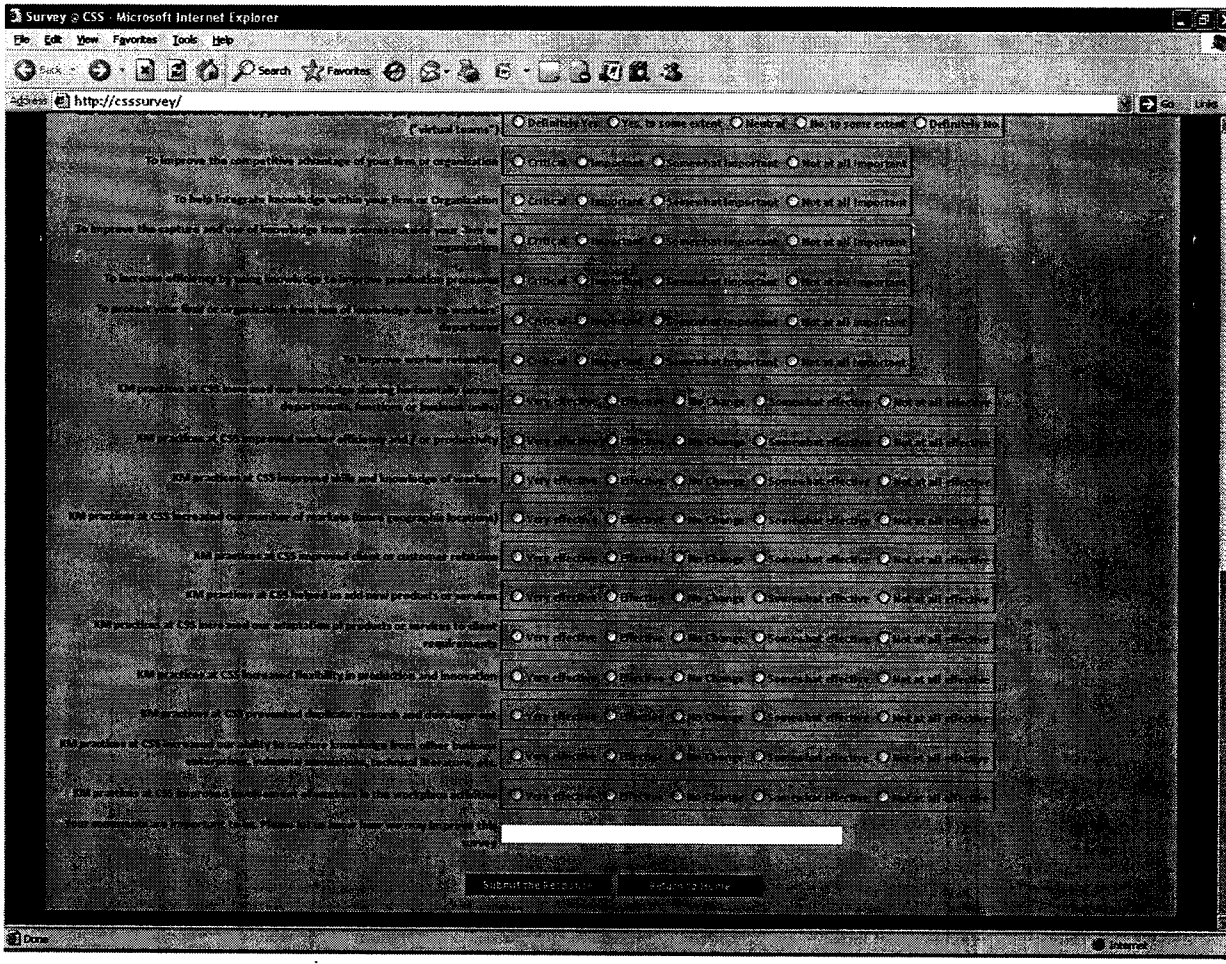


Figure 3.3 Intranet Website Questionnaire page (View II)

3.5.3 Advantages

The main advantages of using this type of data collection methodology are as follows:

- User feels ease at taking up the survey
- Less time is consumed in answering the questions just with a matter of a mouse click
- Validations can be done to ensure all the questions are filled up and nothing is missed out
- The data collected is accurate
- The error in transforming the data from paper to a statistical package is minimized as the data is already available in the required format that could be inputted to the statistical package
- The time in transforming the data from paper to statistical tool is very much reduced

3.6 Data Processing

The data collected using aforementioned methodology are summarized and processed using two main techniques:

- Percentage Analysis
- Chi-Square Test

3.6.1 Percentage Analysis

Percentage Analysis is the earliest and best method to analyze certain demographic data. This method has been used in this work for analyzing certain type of demographic questions like the male & female population, respondent's experience summary etc. Percentage is calculated with the help of the following formula,

% = (No of response/Total samples) * 100

Table 3.1 Percentage calculation formula

3.6.2 Chi-Square Test

The chi-square statistic is a nonparametric statistical technique used to determine if a distribution of observed frequencies differs from the theoretical expected frequencies. Chi-square statistics use nominal (categorical) or ordinal level data, thus instead of using means and variances, this test uses frequencies. The value of the chi-square statistic is given by,

$\chi^2 = \text{Sigma } [(O-E)^2 / E]$

Table 3.2 Chi-Square calculation formula

where,

- χ^2 is the chi-square statistic
- O is the observed frequency
- E is the expected frequency

Data used in a chi-square analysis has to satisfy the following conditions:

- Randomly drawn from the population
- Reported in raw counts of frequency
- Measured variables must be independent
- Observed frequencies cannot be too small

3.6.2.1 Chi-Square test for Goodness of Fit

Goodness of fit means how well a statistical model fits a set of observations. A measure of goodness of fit typically summarizes the discrepancy between observed values and the values expected under the model in question. Such measures can be used in statistical hypothesis testing, e.g., to test for normality of residuals, to test whether two samples are drawn from identical distributions. Thus, the Chi-square test for goodness of fit which compares the expected and observed values is to determine how well an experimenter's predictions fit the data.

3.7 Package for Analysis

Chi square test in SPSS Package is used as a tool for data analysis. SPSS is an acronym for "*Software Package for Statistics and Simulation*". It is developed by SPSS Inc with headquarters in USA but with a world-wide network of supplying organizations and support teams. SPSS version 16.0 is used for this project work. SPSS 16.0 is a comprehensive system for analyzing data. SPSS can take data from almost any type of file and use them to generate tabulated reports, charts, and plots of distributions and trends, descriptive statistics, and complex statistical analyses. SPSS makes statistical analysis more accessible for the beginner and more convenient for the experienced user. Simple menus and dialog box selections make it possible to perform complex analyses without typing a single line of command syntax. The Data Editor offers a simple and efficient spreadsheet-like facility for entering data and browsing the working data file.

CHAPTER 4 - DATA ANALYSIS & INTERPRETATION

4.1 Analysis & Interpretations

4.1.1 Designation

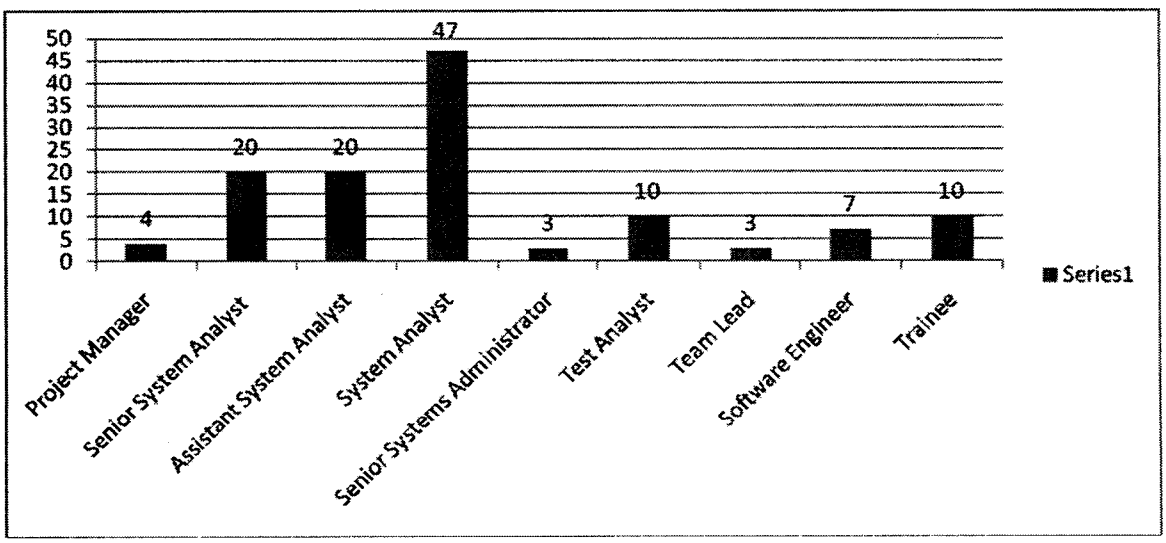
Type of test applied: Percentage Analysis

Consolidated data:

Option	No. of Respondents	Percentage (approx)
Project Manager	4	3.33
Senior System Analyst	20	16.67
Assistant System Analyst	20	16.67
System Analyst	47	39.17
Senior Systems Administrator	3	2.5
Test Analyst	10	8.33
Team Lead	3	2.5
Software Engineer	7	5.83
Trainee	10	8.33
Total	**120**	100

Table 4.1 Responses for Designation

Diagrammatic Representation:



Decision:

Almost all the categories of the employees at CSS have taken this survey.

4.1.2 Gender

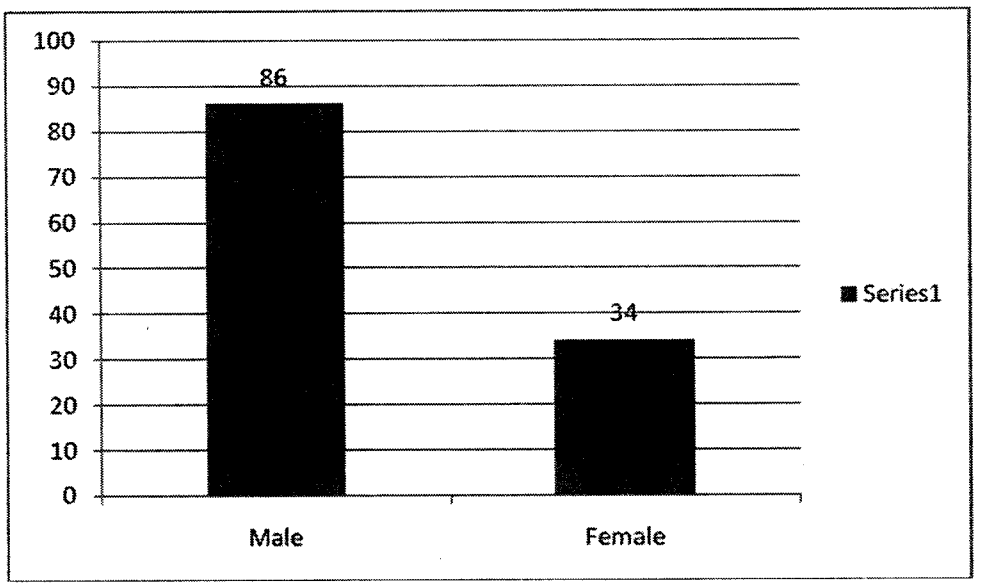
Type of test applied: Percentage Analysis

Consolidated data:

Option	No. of Respondents	Percentage
Male	86	72
Female	34	28
Total	**120**	**100**

Table 4.2 *Responses for Gender*

Diagrammatic Representation:



Decision:

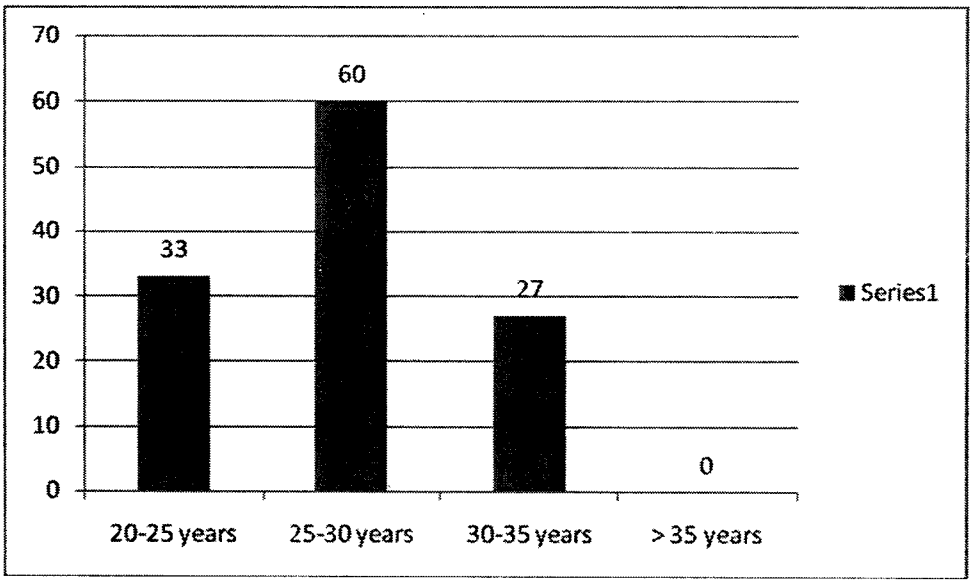
Out of 120 respondents, 86 are male and 34 are female, who have taken this survey.

4.1.3 Age band

Type of test applied: Percentage Analysis

Consolidated data:

Option	No. of Respondents	Percentage
20-25 years	33	27.5
25-30 years	60	50
30-35 years	27	22.5
> 35 years	0	0
Total	**120**	**100**



Decision:

The respondents of this survey fall under the age category between 20 years and 35 years.

4.1.4 Marital Status

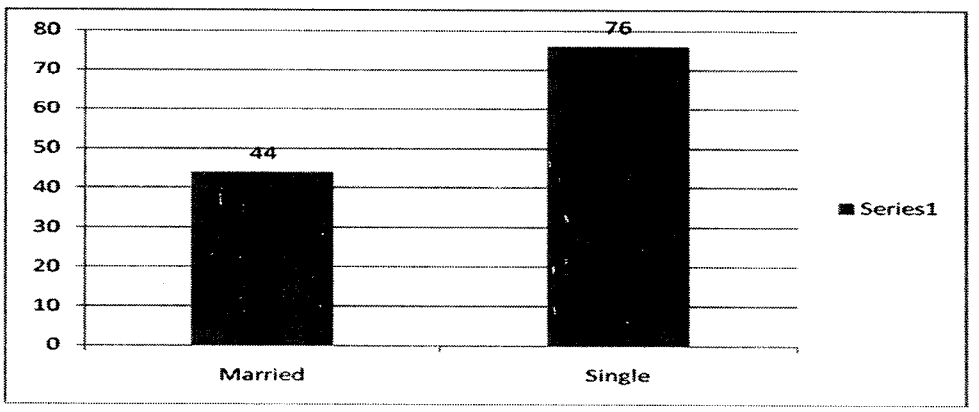
Type of test applied: Percentage Analysis

Consolidated data:

Option	No. of Respondents	Percentage
Married	44	36.67
Single	76	63.33
Total	**120**	**100**

Table 4.4 *Responses for Marital status*

Diagrammatic Representation:



Out of 120 respondents, 44 are married and 76 are single.

4.1.5 Total Experience

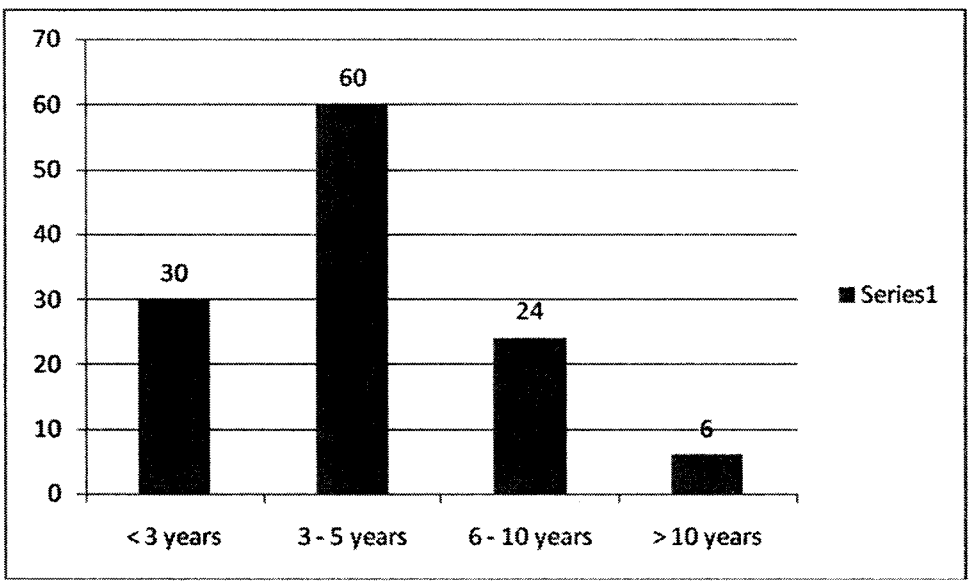
Type of test applied: Percentage Analysis

Consolidated data:

Option	No. of Respondents	Percentage
< 3 years	30	25
3 - 5 years	60	50
6 -10 years	24	20
> 10 years	6	5
Total	**120**	**100**

Table 4.5 *Responses for total experience*

Diagrammatic Representation:



Decision:

Respondents of different experiences, i.e. from freshers to Managers have taken this survey.

4.1.6 KM Policy & Strategy

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	44
Yes, to some extent	56
Neutral	16
No, to some extent	4
Definitely no	0
Total	**120**

***Table 4.6** Responses for KM Policy & Strategy at CSS*

Step 1: State Hypothesis

H0: CSS does not have a written Knowledge management policy or strategy.

H1: CSS has a written Knowledge management policy or strategy.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	44	30.0	14.0
Yes, to some extent	56	30.0	26.0
Neutral	16	30.0	-14.0
No, to some extent	4	30.0	-26.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	58.133[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS do have a written Knowledge management policy or strategy.

4.1.7 KM Value Systems

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	50
Yes, to some extent	32
Neutral	29
No, to some extent	9
Definitely no	0
Total	**120**

Table 4.7 Responses for KM value systems at CSS

Step 1: State Hypothesis

H0: CSS does not have value system(s) to promote knowledge sharing.

H1: CSS has value system(s) to promote knowledge sharing.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	50	30.0	20.0
Yes, to some extent	32	30.0	2.0
Neutral	29	30.0	-1.0
No, to some extent	9	30.0	-21.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	28.200[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has value system(s) to promote

4.1.8 KM Policies for worker retention

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	45
Yes, to some extent	40
Neutral	22
No, to some extent	13
Definitely no	0
Total	**120**

Table 4.8 *Responses for KM policies at CSS*

Step 1: State Hypothesis

H0: CSS does not have policies intended to improve worker retention.

H1: CSS have policies intended to improve worker retention.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	45	30.0	15.0
Yes, to some extent	40	30.0	10.0
Neutral	22	30.0	-8.0
No, to some extent	13	30.0	-17.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	22.600[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS have policies intended to improve worker retention.

4.1.9 Acquisition of Knowledge

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	10
Yes, to some extent	69
Neutral	36
No, to some extent	0
Definitely no	5
Total	**120**

Table 4.9 *Responses for acquisition of knowledge at CSS*

Step 1: State Hypothesis

H0: CSS does not use partnerships or strategic alliances to acquire knowledge.

H1: CSS uses partnerships or strategic alliances to acquire knowledge.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	10	30.0	-20.0
Yes, to some extent	69	30.0	39.0
Neutral	36	30.0	6.0
Definitely no	5	30.0	-25.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	86.067[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

4.1.10 Responsibility

Type of test applied: Direct Analysis

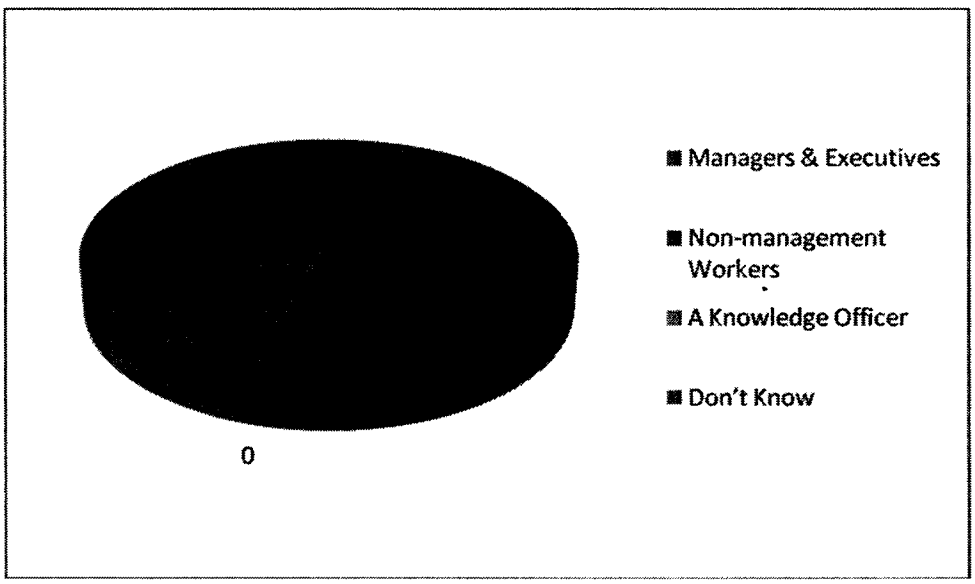
Consolidated data:

At CSS, who is/are responsible for knowledge management practices?

Option	No. of Respondents
Managers & Executives	65
Non-management Workers	0
A Knowledge Officer	14
Don't Know	41
Total	**120**

Table 4.10 *Responses for responsibility for KM at CSS*

Diagrammatic Representation:



Decision:

Managers are responsible for knowledge management practices at CSS.

4.1.11 KM for Performance assessment

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	23
Yes, to some extent	67
Neutral	15
No, to some extent	13
Definitely no	2
Total	**120**

Table 4.11 Responses for Performance assessment at CSS

Step 1: State Hypothesis

H0: KM practices are not explicit criteria for assessing worker performance.

H1: KM practices are explicit criteria for assessing worker performance.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	23	24.0	-1.0
Yes, to some extent	67	24.0	43.0
Neutral	15	24.0	-9.0
No, to some extent	13	24.0	-11.0
Definitely no	2	24.0	-22.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	105.667[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM practices are explicit criteria for

4.1.12 Incentives for Knowledge sharing

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	19
Yes, to some extent	36
Neutral	25
No, to some extent	21
Definitely no	19
Total	**120**

Table 4.12 Responses for incentives for knowledge sharing at CSS

Step 1: State Hypothesis

H0: CSS does not specifically reward knowledge sharing with monetary incentives.

H1: CSS specifically reward knowledge sharing with monetary incentives.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	19	24.0	-5.0
Yes, to some extent	36	24.0	12.0
Neutral	25	24.0	1.0
No, to some extent	21	24.0	-3.0
Definitely no	19	24.0	-5.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	8.500[a]
df	4
Asymp. Sig.	.075

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

Since, $p > 0.05 = \alpha$, null hypothesis is accepted. CSS does not specifically reward

4.1.13 Knowledge capturing

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	26
Yes, to some extent	41
Neutral	40
No, to some extent	4
Definitely no	9
Total	**120**

Table 4.13 Responses for Knowledge capturing at CSS

Step 1: State Hypothesis

H0: CSS does not regularly capture and uses knowledge obtained from other industry sources such as competitors, clients and suppliers.

H1: CSS regularly captures and use knowledge obtained from other industry sources such as competitors, clients and suppliers.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	26	24.0	2.0
Yes, to some extent	41	24.0	17.0
Neutral	40	24.0	16.0
No, to some extent	4	24.0	-20.0
Definitely no	9	24.0	-15.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	48.917[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.14 External knowledge

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	16
Yes, to some extent	59
Neutral	19
No, to some extent	16
Definitely no	10
Total	**120**

Table 4.14 Responses for external knowledge capturing at CSS

Step 1: State Hypothesis

H0: CSS does not regularly dedicate resources for detecting and obtaining external knowledge and communicating it within your firm (or) organization.

H1: CSS regularly dedicates resources for detecting and obtaining external knowledge and communicating it within your firm (or) organization.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	16	24.0	-8.0
Yes, to some extent	59	24.0	35.0
Neutral	19	24.0	-5.0
No, to some extent	16	24.0	-8.0
Definitely no	10	24.0	-14.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	65.583[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.15 KM Training

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	25
Yes, to some extent	40
Neutral	29
No, to some extent	16
Definitely no	10
Total	**120**

Table 4.15 Responses for KM training at CSS

Step 1: State Hypothesis

H0: CSS does not provide formal training related to knowledge management practices.

H1: CSS provides formal training related to knowledge management practices.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	25	24.0	1.0
Yes, to some extent	40	24.0	16.0
Neutral	29	24.0	5.0
No, to some extent	16	24.0	-8.0
Definitely no	10	24.0	-14.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	22.583[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

Since, $p < 0.05 = \alpha$, null hypothesis is rejected. CSS provides formal training related

4.1.16 Knowledge Transfer

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	55
Yes, to some extent	40
Neutral	11
No, to some extent	0
Definitely no	14
Total	**120**

Table 4.16 Responses for knowledge transfer at CSS

Step 1: State Hypothesis

H0: CSS does not encourage experienced workers to transfer their knowledge to new or less experienced workers.

H1: CSS encourages experienced workers to transfer their knowledge to new or less experienced workers.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	55	30.0	25.0
Yes, to some extent	40	30.0	10.0
Neutral	11	30.0	-19.0
Definitely no	14	30.0	-16.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	44.733[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p < 0.05 = \alpha$, null hypothesis is rejected. CSS encourages experienced

4.1.17 Higher Education Fees Reimbursement

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	31
Yes, to some extent	54
Neutral	30
No, to some extent	0
Definitely no	5
Total	**120**

Table 4.17 Responses for education fee reimbursement at CSS

Step 1: State Hypothesis

H0: CSS does not encourage workers to continue their education by reimbursing tuition fees for successfully completed work-related courses.

H1: CSS encourages workers to continue their education by reimbursing tuition fees.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	31	30.0	1.0
Yes, to some extent	54	30.0	24.0
Neutral	30	30.0	.0
Definitely no	5	30.0	-25.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	40.067[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS encourages workers to continue their education by reimbursing tuition fees for successfully completed work-related courses.

4.1.18 Off-site Training

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	7
Yes, to some extent	58
Neutral	29
No, to some extent	16
Definitely no	10
Total	**120**

Table 4.18 Responses for offsite training at CSS

Step 1: State Hypothesis

H0: CSS does not offer off-site training to workers in order to keep skills current.

H1: CSS offers off-site training to workers in order to keep skills current.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	7	24.0	-17.0
Yes, to some extent	58	24.0	34.0
Neutral	29	24.0	5.0
No, to some extent	16	24.0	-8.0
Definitely no	10	24.0	-14.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	72.083[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS offers off-site training to

4.1.19 Knowledge database updations

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	22
Yes, to some extent	43
Neutral	40
No, to some extent	11
Definitely no	4
Total	**120**

Table 4.19 Responses for knowledge database updations at CSS

Step 1: State Hypothesis

H0: CSS does not regularly updates databases of good work practices, lessons learned or listings of experts.

H1: CSS regularly updates databases of good work practices, lessons learned or listings of experts.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	22	24.0	-2.0
Yes, to some extent	43	24.0	19.0
Neutral	40	24.0	16.0
No, to some extent	11	24.0	-13.0
Definitely no	4	24.0	-20.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	49.583[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.20 Organizational Memory

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	20
Yes, to some extent	45
Neutral	25
No, to some extent	30
Definitely no	0
Total	**120**

Table 4.20 Responses for organizational memory at CSS

Step 1: State Hypothesis

H0: CSS does not prepare written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc.

H1: CSS prepares written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	20	30.0	-10.0
Yes, to some extent	45	30.0	15.0
Neutral	25	30.0	-5.0
No, to some extent	30	30.0	.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	11.667[a]
df	3
Asymp. Sig.	.009

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

4.1.21 Virtual Teams

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Definitely yes	14
Yes, to some extent	56
Neutral	35
No, to some extent	15
Definitely no	0
Total	**120**

Table 4.21 Responses for virtual teams at CSS

Step 1: State Hypothesis

H0: CSS does not facilitate collaborative work by projects teams that are physically separated.

H1: CSS facilitates collaborative work by projects teams that are physically separated.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Definitely yes	14	30.0	-16.0
Yes, to some extent	56	30.0	26.0
Neutral	35	30.0	5.0
No, to some extent	15	30.0	-15.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	39.400[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

4.1.22 Competitive Advantage

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	15
Important	90
Somewhat Important	15
Not at all important	0
Total	**120**

***Table 4.22** Responses for improving competitive advantage at CSS*

Step 1: State Hypothesis

H0: To improve the competitive advantage of CSS is not so critical.

H1: To improve the competitive advantage of CSS is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	15	40.0	-25.0
Important	90	40.0	50.0
Somewhat Important	15	40.0	-25.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	93.750[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to improve the competitive advantage.

4.1.23 Knowledge Integration

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	20
Important	86
Somewhat Important	14
Not at all important	0
Total	**120**

Table 4.23 *Responses for improving knowledge integration at CSS*

Step 1: State Hypothesis

H0: To help integrate knowledge within CSS is not so critical.

H1: To help integrate knowledge within CSS is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	20	40.0	-20.0
Important	86	40.0	46.0
Somewhat Important	14	40.0	-26.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	79.800[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to integrate the knowledge within the organization.

4.1.24 External Knowledge capturing

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	6
Important	69
Somewhat Important	45
Not at all important	0
Total	120

Table 4.24 Responses for improving external knowledge capturing at CSS

Step 1: State Hypothesis

H0: To improve the capture and use of knowledge from sources outside CSS is not so critical.

H1: To improve the capture and use of knowledge from sources outside CSS is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	6	40.0	-34.0
Important	69	40.0	29.0
Somewhat Important	45	40.0	5.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	50.550[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to improve the capture and use of knowledge from sources outside the organization.

4.1.25 Production Efficiency

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	15
Important	101
Somewhat Important	4
Not at all important	0
Total	**120**

***Table 4.25** Responses for improving production efficiency at CSS*

Step 1: State Hypothesis

H0: To increase efficiency by using knowledge to improve production processes is not so critical.

H1: To increase efficiency by using knowledge to improve production processes is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	15	40.0	-25.0
Important	101	40.0	61.0
Somewhat Important	4	40.0	-36.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	141.050[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to increase the efficiency by

4.1.26 Loss of Knowledge

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	6
Important	79
Somewhat Important	26
Not at all important	9
Total	**120**

***Table 4.26** Responses for reducing loss of knowledge at CSS*

Step 1: State Hypothesis

H0: To protect CSS from loss of knowledge due to workers' departures is not so critical.

H1: To protect CSS from loss of knowledge due to workers' departures is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	6	30.0	-24.0
Important	79	30.0	49.0
Somewhat Important	26	30.0	-4.0
Not at all Important	9	30.0	-21.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	114.467[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to protect loss of knowledge

4.1.27 Worker Retention

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Critical	24
Important	66
Somewhat Important	30
Not at all important	0
Total	**120**

Table 4.27 Responses for improving worker retention at CSS

Step 1: State Hypothesis

H0: To improve worker retention is not so critical.

H1: To improve worker retention is critical.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Critical	24	40.0	-16.0
Important	66	40.0	26.0
Somewhat Important	30	40.0	-10.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	25.800[a]
df	2
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 40.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. CSS has to improve worker retention.

4.1.28 Knowledge Sharing

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	17
Effective	58
No change	20
Somewhat effective	21
Not at all effective	4
Total	**120**

Table 4.28 *Responses for improving knowledge sharing at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not increased the knowledge sharing horizontally (across departments, functions or business units).

H1: KM Practices at CSS has increased the knowledge sharing horizontally.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	17	24.0	-7.0
Effective	58	24.0	34.0
No change	20	24.0	-4.0
Somewhat effective	21	24.0	-3.0
Not at all effective	4	24.0	-20.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	67.917[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.29 Worker Efficiency

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	20
Effective	60
No change	22
Somewhat effective	18
Not at all effective	0
Total	**120**

Table 4.29 *Responses for improving worker efficiency at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not improved worker efficiency and/or productivity.

H1: KM Practices at CSS has improved worker efficiency and/or productivity.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	20	30.0	-10.0
Effective	60	30.0	30.0
No change	22	30.0	-8.0
Somewhat effective	18	30.0	-12.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	40.267[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has improved

4.1.30 Worker's Knowledge improvement

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	24
Effective	61
No change	19
Somewhat effective	11
Not at all effective	5
Total	**120**

***Table 4.30** Responses for improving worker's knowledge at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not improved skills and knowledge of workers.

H1: KM Practices at CSS has improved skills and knowledge of workers.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	24	24.0	.0
Effective	61	24.0	37.0
No change	19	24.0	-5.0
Somewhat effective	11	24.0	-13.0
Not at all effective	5	24.0	-19.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	80.167[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.31 Market improvement

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	6
Effective	79
No change	22
Somewhat effective	8
Not at all effective	5
Total	**120**

Table 4.31 Responses for improving global market for CSS

Step 1: State Hypothesis

H0: KM Practices at CSS has not increased number of markets (more geographic locations).

H1: KM Practices at CSS has increased number of markets.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	6	24.0	-18.0
Effective	79	24.0	55.0
No change	22	24.0	-2.0
Somewhat effective	8	24.0	-16.0
Not at all effective	5	24.0	-19.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	165.417[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

4.1.32 Customer Relations

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	10
Effective	80
No change	21
Somewhat effective	9
Not at all effective	0
Total	**120**

Table 4.32 Responses for improving customer relations at CSS

Step 1: State Hypothesis

H0: KM Practices at CSS has not improved client or customer relations.

H1: KM Practices at CSS has improved client or customer relations.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	10	30.0	-20.0
Effective	80	30.0	50.0
No change	21	30.0	-9.0
Somewhat effective	9	30.0	-21.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	114.067[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has improved

4.1.33 New product/Services

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	27
Effective	58
No change	24
Somewhat effective	11
Not at all effective	0
Total	**120**

Table 4.33 Responses for adding new products/services at CSS

Step 1: State Hypothesis

H0: KM Practices at CSS has not helped to add new products or services.

H1: KM Practices at CSS has helped to add new products or services.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	27	30.0	-3.0
Effective	58	30.0	28.0
No change	24	30.0	-6.0
Somewhat effective	11	30.0	-19.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	39.667[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has helped to

4.1.34 New product/Services Adaptation

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	21
Effective	84
No change	10
Somewhat effective	5
Not at all effective	0
Total	**120**

Table 4.34 Responses for adapting to new products/services at CSS

Step 1: State Hypothesis

H0: KM Practices at CSS has not increased adaptation of products or services to client requirements.

H1: KM Practices at CSS has increased adaptation of products or services to client requirements.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	21	30.0	-9.0
Effective	84	30.0	54.0
No change	10	30.0	-20.0
Somewhat effective	5	30.0	-25.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	134.067[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

4.1.35 Flexibility in production processes

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	22
Effective	63
No change	23
Somewhat effective	12
Not at all effective	0
Total	**120**

Table 4.35 Responses for increasing flexibility in production process at CSS

Step 1: State Hypothesis

H0: KM Practices at CSS has not increased flexibility in production and innovation.

H1: KM Practices at CSS has increased flexibility in production and innovation.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	22	30.0	-8.0
Effective	63	30.0	33.0
No change	23	30.0	-7.0
Somewhat effective	12	30.0	-18.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	50.867[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has increased

4.1.36 Duplicate R&D

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	11
Effective	64
No change	28
Somewhat effective	12
Not at all effective	5
Total	**120**

Table 4.36 *Responses for reduced duplicate R&D at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not prevented duplicate research and development.

H1: KM Practices at CSS has prevented duplicate research and development.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	11	24.0	-13.0
Effective	64	24.0	40.0
No change	28	24.0	4.0
Somewhat effective	12	24.0	-12.0
Not at all effective	5	24.0	-19.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	95.417[a]
df	4
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 24.0.

Decision:

Since, $p < 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has prevented

4.1.37 Ability to capture Knowledge

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	20
Effective	55
No change	28
Somewhat effective	17
Not at all effective	0
Total	**120**

***Table 4.37** Responses for ability to capture knowledge at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not increased the ability to capture knowledge from other business enterprises, industrial associations, technical literature, etc.

H1: KM Practices at CSS has increased the ability to capture knowledge from other business enterprises, industrial associations, technical literature, etc.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	20	30.0	-10.0
Effective	55	30.0	25.0
No change	28	30.0	-2.0
Somewhat effective	17	30.0	-13.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	29.933[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

4.1.38 Involvement of workers

Type of test applied: Chi-square Test

Consolidated data:

Option	No. of Respondents
Very effective	15
Effective	72
No change	18
Somewhat effective	15
Not at all effective	0
Total	**120**

Table 4.38 *Responses for improved worker involvement at CSS*

Step 1: State Hypothesis

H0: KM Practices at CSS has not improved involvement of workers in the workplace activities.

H1: KM Practices at CSS has improved involvement of workers in the workplace activities.

Step 2: Significance & Rejection Level

Let, $\alpha = 0.05$. Reject null hypothesis if p-value $\leq 0.05 = \alpha$.

Step 3: Calculate Expected Frequencies

Feedback

	Observed N	Expected N	Residual
Very effective	15	30.0	-15.0
Effective	72	30.0	42.0
No change	18	30.0	-12.0
Somewhat effective	15	30.0	-15.0
Total	120		

Step 4: Test statistics and p-value

Test Statistics

	Feedback
Chi-Square	78.600[a]
df	3
Asymp. Sig.	.000

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 30.0.

Decision:

Since, $p \leq 0.05 = \alpha$, null hypothesis is rejected. KM Practices at CSS has improved

CHAPTER 5 - CONCLUSIONS

5.1 Summary of Findings

The findings of the study at CSS for effective utilization of Knowledge Management may be summarized as follows:

- Of 120 respondents who have taken this survey, 86 were male and 34 were female; 44 were married and 76 were single; almost everyone fall under the age category between 20 and 35 years;
- CSS has effectively incorporated Knowledge Management
- CSS continuously monitors and dedicates mentors to bring awareness on KM
- KM has improved the way CSS performs its operations

5.2 Conclusions

Objective 1: *To assess how effectively KM is utilized at CSS*

- CSS has a written Knowledge management policy or strategy and has value systems to promote knowledge sharing.
- CSS uses partnerships or strategic alliances to acquire knowledge and has policies that improved worker retention
- At CSS, Managers are responsible for Knowledge Management. They do not specifically reward knowledge sharing with monetary incentives
- CSS regularly captures and uses knowledge obtained from other industry sources such as competitors, clients and suppliers; dedicates resources for detecting and obtaining external knowledge and communicating it within the organization
- CSS encourages experienced workers to transfer their knowledge to new or less experienced workers through formal training. It also offers off-site training to workers in order to keep skills current
- CSS encourages workers to continue their education by reimbursing tuition fees for successfully completed work-related courses
- CSS regularly updates databases of good work practices, lessons learned or listings of experts and prepares written documentation.

Objective 2: *To identify the backlogs, hindrances in implementing KM at CSS*

- KM practices at CSS has increased the knowledge sharing horizontally
- KM practices at CSS has improved

- KM practices at CSS has increased the number of markets
- KM practices at CSS has improved client or customer relations
- KM practices at CSS has helped to add new products or services
- KM practices at CSS has increased the adaptation of products or services to client requirements
- KM practices at CSS has increased flexibility in production and innovation
- KM practices at CSS has prevented duplicate research and development
- KM practices at CSS have increased the ability to capture knowledge from other business enterprises, industrial associations, technical literature, etc.
- KM practices at CSS has improved involvement of workers in the workplace activities

5.3 Suggestions & Recommendations

Objective 3: *To propose effective measures to overcome the problems of implementation of KM at CSS*

- CSS has to improve the competitive advantage
- CSS has to integrate knowledge within the organization
- CSS has to improve the usage of knowledge from sources outside the organization
- CSS has to increase efficiency by using knowledge to improve production processes
- CSS has to improve worker retention

5.4 Directions for Future Research

The following areas may be focused on for continuing the future research.

- How knowledge management helped CSS to gain competitive advantage
- How effective the knowledge capturing at CSS outside the organization and effective dissemination within the organization
- How effective is when a Knowledge Office is appointed at CSS who takes care of all Knowledge management activities
- How well the employees at CSS keep track of knowledge documentation and sharing through Knowledge Transfer

APPENDIX

I. Questionnaire

1. Personal Details:

#	Question	Options
1.1	**Name (Optional)**	
1.2	**Designation**	
1.3	**Gender**	○ Male ○ Female
1.4	**Age**	○ 20-25 years ○ 25-30 years ○ 30-35 years ○ > 35 years
1.5	**Marital status**	○ Married ○ Single
1.6	**Total experience**	○ < 3 years ○ 3-5 years ○ 6-10 years ○ > 10 years

2. Knowledge Management Practices:

#	Question
2.1	**CSS has a written Knowledge management policy or strategy.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.2	**CSS has a value system(s) to promote knowledge sharing.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.3	**CSS has policies intended to improve worker retention.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.4	**CSS uses partnerships or strategic alliances to acquire knowledge.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.5	**At CSS, who is/are responsible for knowledge management practices?** ○ Managers & Executives ○ Non-Management workers ○ A Knowledge Officer ○ Don't Know
2.6	**Knowledge management practices are explicit criteria for assessing worker performance.**

2.7	**CSS specifically rewards knowledge sharing with monetary incentives.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.8	**CSS regularly captures and uses knowledge obtained from other industry sources such as competitors, clients and suppliers.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.9	**CSS regularly dedicates resources for detecting and obtaining external knowledge and communicating it within your firm (or) organization.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.10	**CSS provides formal training related to knowledge management practices.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.11	**CSS encourages experienced workers to transfer their knowledge to new or less experienced workers.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.12	**CSS encourages workers to continue their education by reimbursing tuition fees for successfully completed work-related courses.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.13	**CSS offers off-site training to workers in order to keep skills current.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.14	**CSS regularly updates databases of good work practices, lessons learned or listings of experts.** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.15	**CSS prepares written documentation such as lessons learned, training manuals, good work practices, articles for publication, etc. (Organizational memory)** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no
2.16	**CSS facilitates collaborative work by projects teams that are physically separated (Virtual Teams).** ○ Definitely yes ○ Yes, to some extent ○ Neutral ○ No, to some extent ○ Definitely no

3. Reasons for using Knowledge Management Practices:

#	Question
3.1	**To improve the competitive advantage of your firm or organization.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important
3.2	**To help integrate knowledge within your firm or organization.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important
3.3	**To improve the capture and use of knowledge from sources outside your firm or organization.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important
3.4	**To increase efficiency by using knowledge to improve production processes.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important
3.5	**To protect your firm or organization from loss of knowledge due to workers' departures.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important
3.6	**To improve worker retention.** ○ Critical ○ Important ○ Somewhat important ○ Not at all important

4. Results of using Knowledge Management Practices:

#	Question
4.1	**Increased our knowledge sharing horizontally (across departments, functions or BU).** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.2	**Improved worker efficiency and/or productivity.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.3	**Improved skills and knowledge of workers.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.4	**Increased our number of markets (more geographic locations).** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.5	**Improved client or customer relations.**

4.6	**Helped us to add new products or services.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.7	**Increased our adaptation of products or services to client requirements.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.8	**Increased flexibility in production and innovation.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.9	**Prevented duplicate research and development.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.10	**Increased our ability to capture knowledge from other business enterprises industrial associations, technical literature, etc.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective
4.11	**Improved involvement of workers in the workplace activities.** ○ Very effective ○ Effective ○ No change ○ Somewhat effective ○ Not at all effective

5. Areas of Improvement:

#	Question
5.1	**Your comments are important to us. Please let us know how we may improve this survey.**

Certified that the above questionnaire is valid for data collection at CSS.

For CSS Corp Pvt Ltd,

M. Sudarsan Durai,
Senior Executive - HR,
Coimbatore.

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