

To Analyze Challenges in Planning and Implementing IT Solutions by a Healthcare IT Company

By

Sheenam Nijhawan

*Dissertation submitted for the partial fulfillment of the
MBA Hospital and Health Management*

Academic year, 2015-2017



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TO WHOMSOEVER MAY CONCERN

This is to certify that Dr. SheenamNijhawan student of MBA Hospital and Health Management from the IIHMR University, Jaipur has undergone internship training at Napier Healthcare, Hyderabad from 1February, 2017 to 28 April, 2017.

The Candidate has successfully carried out the study designated to her during internship training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all her future endeavors.



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28th Apr, 2017

TO WHOM SO EVER IT MAY CONCERN

This certificate is awarded to Dr. Sheenam Nijhawan in recognition to successful completion of her Internship in the department of **Product Management**.

She has worked on the project “**analyze challenges in planning and implementing IT solutions by Healthcare IT Company**” effective from: 1st February, 2017 till 28th April, 2017.

We wish her all the best for future endeavors.

For Napier Healthcare Solutions (India) Ltd



Mahendra Pratap Singh
Head – Human Resource

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“To analyze challenges in planning and implementing IT solutions by a Healthcare IT company”** and submitted by Dr. Sheenam Nijhawan Enrollment no. IIHMR-U/01/2015-17/0346 under the supervision of Dr, Sandesh Kumar Sharma for award of MBA in Hospital and Health Management of the University carried out during the period from 1 February to 28 April, 2017 embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.


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THE IIMMR UNIVERSITY, JAIPUR

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This is to certify that all ethical issues have been considered while collecting data for my dissertation titled **“To analyze challenges in planning and implementing IT solutions by a Healthcare IT company”**.

Shechan

Signature of student

**To analyze challenges in planning and
implementing IT solutions by a Healthcare IT
company**

Abstract

To analyze challenges in planning and implementing IT solutions by a Healthcare IT company

Dr. Sheenam Nijhawan

Background

The following research addresses the challenges affecting project planning and implementation in a Healthcare IT company. The issues described in this research are addressed in the context of IT Project Management; especially with regard to the question of the needs and perceptions of employees in the organization .This study will also provide knowledge about the problematic issues faced during project planning, timely completion and implementation and how the employees perceive them.

This study discuss the management and organizational issues that show a show relationship to project management and the descriptive data that reveals employee's perception about issues surrounding planning and implementation. Each of these provisions is integral to developing a comprehensive understanding of the problems associated with the planning, timely completion and implementation of projects in the organization .

Keywords: project management, Healthcare IT, project planning, project implementation

Objectives

- To identify the key challenges faced while planning and implementation of a project in a Healthcare IT Company
- To assess the effectiveness of existing planning and implementation process for a project in the organization

- To categorize the various planning and implementation issues under broader organizational issues

Methods

This study has been conducted in a Multinational Healthcare IT Company in Hyderabad, India. The duration of the study was 3 months from February to April 2017. This study is a cross-sectional, descriptive study with both quantitative and qualitative study design. The data collected was primary by face to face interviews with the help of a semi structured questionnaire consisting of open ended questions. The choice of respondents consisted of employees from 4 departments i.e. Business analysts, Testers, Developers and Customer Support Services. The criteria for selection was that they should have atleast 1 year working experience in the organization and were actively involved in the project.

The quantitative data was analysed using MS Excel and categorized into different organizational issues. The qualitative data was written and then analysed. The process of handling the data in this research was to write down the interviews after conducting them and then read and analyze that information through interpretation.

Results

The Quantitative data showed that interdepartmental coordination, timeframes and scheduling, strategic planning and training were the major issues during three phases of project management.

56% of the respondents perceived the issue of lack of training to be highly problematic . All other issues that were identified as somewhat problematic were: improper timeframes and scheduling (59%), lack of strategic planning (50%), absence of written guidelines and procedures (53%), organizational culture (50%), existing processes and system (53%), adequate staffing (50%) and lack of technological compatibility between existing systems and software (50%).

There were many **recurrent gaps in project management** of which inter and intra departmental coordination, effort estimation and changing framework came out to be the major ones.

Some of the **major challenges which the employees faced** included improper time framing, changing requirements, lack of training, coordination between different departments and ego clashes between personnel.

Conclusions

The research in this study suggests that there are three primary results, which are shown here. The first is that—strategic planning is deficient for any project and is a problematic issue. Secondly, it is shown that interdepartmental coordination has proven to be a major factor in effective planning and implementation. Finally, it has shown that lack of training of employees is a highly problematic issue which needs to be addressed to improve efficiency in work and their expertise .

Time estimates need to be as realistic as possible. Time estimating is a best-guess using the available information, and establishing the right climate for estimates is essential to ensure accuracy . Scheduling and time estimates should be done after careful understanding requirements and existing capacity and competency. Requirement documents are a snapshot of the things and processes at the time when they are written. We may not accept each and every change that is asked for but keeping them aside may lead us missing on some important points. This change should also be effectively communicated between departments through proper documentation and physical meetings. This has two benefits, first the message is sent effectively and secondly meeting with different people involved in a project and discussing what led to changes and how will it help the project will instill confidence and team spirit amongst different team members.

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List of symbols and Abbreviations

ABBREVIATION	FULL FORM
• IT	Information Technology
• HL7	Health Level 7
• ICD	International classification for Diseases
• DICOM	Digital Imaging and Communication
• ISO	International Organization for Standardization
• HIPAA	Health Insurance Portability and Accountability Act
• HIS	Hospital Information System
• EHR	Electronic Health Record
• LIS	Laboratory Information System
• CAHs	Critical Access Hospitals
• RPM	Remote Patient Monitoring
• CPOE	Computerized Physician Order Entry
• HIEs	Health Information Exchanges
• PMBOK	Product Management Body of Knowledge
• BA	Business Analyst
• CSS	Customer Support and Services
• UAT	User Acceptance Test
• WBS	Work Breakdown Structure
• SOPs	Standard Operating Protocols

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1.0 Introduction

New realities are placing pressures on the healthcare industry, and how patient care is delivered. Rise in the costs of managing hospitals, aging population, a shortage of healthcare workers, challenges in accessing services, timely availability of information, issues of safety and quality, and rising consumerism are some of the facts of today's healthcare system [1]. The healthcare industry needs to decide how services could be delivered more effectively to reduce costs and improve quality to extend their reach. The critical questions that the hospitals are facing are like how to manage hospitals effectively and provide enhanced services; how to provide cost-efficient healthcare services; how to reduce medical errors by efficient resource utilization .

These are just a few questions facing the industry. In order to solve these issues many new information technologies are available to help. Information technologies that enable immediate, information-rich communications and provide easy-to-use collaborative tools are increasingly becoming a vital part of today's healthcare .

According to the report "Healthcare IT Market by Product (EHR, RIS, PACS, VNA, CPOE, HIE, Telehealth, Healthcare Analytics, Population Health Management, Supply Chain Management, CRM, Fraud Management, Claims Management) End User (Provider, Payer) - Global Forecast to 2021" [2], The healthcare IT market is projected to reach USD 280.25 Billion by 2021 from USD 134.25 Billion in 2016. The demand for IT in hospitals is increasing to reduce costs and efficiency and follow regulatory requirements of government organizations to ensure safety and confidentiality of patient's information. This has led to a growing demand for health information exchanges (HIEs) and EHR systems and improved quality of care.

Many Healthcare IT companies are committed to provide Healthcare IT solutions to prepare hospitals to meet future challenges. These companies empower the hospitals by providing them products such as Hospital Management Information System to capture useful information regarding patients, hospital operations etc. The IT companies do a

comprehensive requirement analysis to provide hospitals to meet and sustain the above mentioned challenges.

Every organization faces problems that can be in either projects or resource utilization or any operations activity. They can vary from project priorities, the organizational environment, the attitude of staff with each other and the leadership style used for directing and controlling project activities. Therefore, the project plan should be designed keeping in mind the organizational structure and operational constraints. Project plan for every project cannot be the same because of changes in priorities, availability of resources, project personnel and other contingencies. For a successful project management the organization's management must realize that there should be a dynamic equilibrium between limited personnel and financial resources and the objectives of the project should be clearly informed .[3].

1.1 Aim

To analyze the planning and implementation challenges faced during project management in a Healthcare IT company.

1.2 Objectives

- To identify the key challenges faced while planning and implementation of a project in a Healthcare IT Company
- To assess the effectiveness of existing planning and implementation process for a project in the organization
- To categorize the various planning and implementation issues under broader organizational issues

1.3 Rationale

Project management is the art of managing the project and its deliverables with a view to produce finished products or service. It includes: identification of requirements,

establishment and elicitation of clear and achievable objectives, balancing of competing demands from the different stakeholders and ensuring achievement of commonality of purpose ^[4]. A scientific approach to manage projects and achieving the objectives is very important for a successful execution of a project within the constraints of time, quality and scope. This approach helps to deliver the required results. A proper and organized framework is required to define the process and way of doing things to ensure positive results. Identifying the major challenges faced during project planning and implementation can ensure awareness among the organization about the loopholes that need to be corrected in the process of project management.

1.4 Research Questions

In order to achieve the objective of the study, the following research questions were identified :

- What are the most problematic issues faced by Healthcare IT Company during project planning ?
- What are the most problematic issues faced by Healthcare IT Company during timely completion of a project ?
- What are the most problematic issues faced by Healthcare IT Company during project implementation ?
- What are the key issues that need to be identified in order to achieve a successful project management ?

2.0 Literature Review

The project management plays a very important role for a successful product delivery, Many projects are undertaken in industries for execution for a specific purpose. This is in contrast with the operations in business, which are either repetitive or permanent to produce services or products. Management of these two systems is different in practice and it requires development of efficient and distinct technical skills and strategies. It has been observed that the challenges that project managers usually face in practice of managing a project are unrealistic deadlines, communication deficit, scope creep, failure in risks management etc . [5]. These challenges can lead a project to failure or can lead to schedule and/or budget overrun. As per a survey done in 2011 just for IT industry projects, it was observed that only 37 % of projects were completed as per original plan, rest of the projects either were challenged and exceeded the original baseline or got scrapped. There has been a financial burden of more than \$1 trillion in the US alone due to IT project failure. It is evident from this statistics that there is a need for the organizations to realize that there is a need to manage projects efficiently and effectively. This paper attempts to discuss the key variables, which decide the success or failure of an IT project. Based on the previous studies and research done regarding issues in project management, it is evident that there is a large financial burden due to low rate of project execution success with respect to scope, cost and schedules. In this study the dependent that is the challenges in project management, independent that is the stakeholder management and risk management and the moderating and intervening variables were studied and analyzed .

Increasing demand for global expansion and better technology provides developers with many opportunities in a project. These opportunities can lead to project failure or success depending upon the execution and implementation. Every industry is susceptible to project failures of which the Information Technology (IT) industry is at higher risk and failure than those of other industries. Agile project management has become more popular in IT industry today. This practice facilitates adaptation to changing scenarios and alleviates rigid formal controls. [6].

It is observed that difficulties may arise in these projects even in the beginning, and the client may not approve the project itself. Planning problems, especially those dealing with defining project scope, are generally a major cause of failure when dealing with projects [6].

Dr. Harold Kerzner coined the term “perceived failure” and suggested that failed projects are a result of some combination of both actual and planning failure. Actual failure occurs because there is a discrepancy between what was planned and what was accomplished, whereas planning failure occurs because there is a discrepancy in what was planned and what was actually achievable. He stated that human dynamics played an important role in project management. He acknowledged that the major issues in failure of any project are poor motivation, productivity, and human relations; lack of employee and functional commitment; delayed problem solving; and unresolved policy and stakeholder issues [6]. Identifying risks as well as their impact in the beginning and throughout the project can increase the likelihood of success and accurate results .

The critical input for each project management process is to analyse the contextual plane before project planning. Product Management Body of Knowledge (PMBOK) presume nearly perfect knowledge about the relative contexts and path of the project, which include various technical, social, organizational, managerial, and political dimensions of a project [7]. Lack of consideration of impact of human dynamics on project execution may affect process inputs, especially with regard to the social and political contexts and may even result in selecting a suboptimal methodology or ineffective project team members.

Project Management is a collection of various tools and techniques that direct use of available resources and accomplishment of a defined task within constraints of time, cost and quality. A particular mix of tools and techniques are required for different projects throughout the project life cycle.[8]

The disruption of routine business activities can be minimized by adopting efficient and effective project management process. It would ensure project success by placing under a single command all of the skills, technologies, and resources needed to realize the project .

Each project has a different skill requirement depending on the constraints and organizational structure. Greater adjustments made in the organization increases the chances of project failure [8].

There are four phases of project management process: initiating the project, planning the project, executing the project, and closing the project. An outline of each phase is provided below. Figure1. shows the process of project management [9]. It shows the stages of project management .

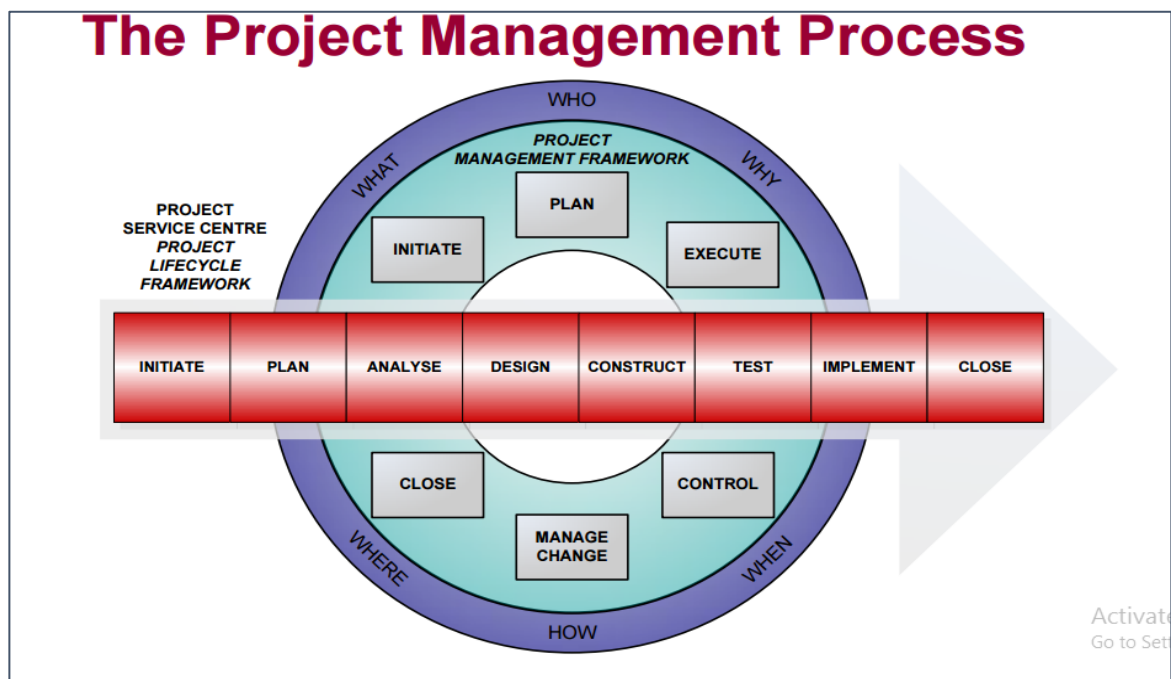


FIGURE 1. PROJECT MANAGEMENT PROCESS

Initiating the Project [10]

The project initiation includes five steps that are establishing a team, relationship with the customer, formulating a project plan, defining management procedures and establishing working environment.

The first step involves organizing team members to assist in carrying out the project initiation activities. This is followed by understanding customer's organization and its business process to build a strong relationship between the two. A project plan must be prepared to define goals and scope of the project. A proper communication and reporting procedures, job assignments, funding and billing of project should be prepared .

Planning the Project [10]

The project management techniques related to the project planning phase include: describing project scope and feasibility, division of project into tasks, estimation of resources and creating a resource plan, developing a preliminary schedule, developing a communication plan, determining project standards and procedures, identifying and assessing risk, creating a preliminary budget, developing a statement of work and setting a baseline project plan .

This ensures understanding of the content and complexity of the project. It helps to address some relevant questions like what results are to be achieved, how success will be measured and what needs to be done .

Dividing the project into tasks is also known as work breakdown structure (WBS). This step is important to ensure an easy progression between tasks.

Estimating resources available can help to gather and arrange resources in the most effective manner. This can lead to assignment of time estimates for each activity in WBS. The target start and the end dates can be created. The standards and specifications of how various

deliverables are produced and tested are very important and should be defined properly to identify the sources of risk and its consequences.

Assessment of risks can help to summarize the planned expenses and revenues related to the project. Documentation is an important part of project planning and should not be neglected as it provides a list of the work to be done and the expected outcome.

Executing the Project [10]

The execution phase includes executing the baseline project plan, Monitoring project progress against the baseline project plan, Managing changes to the baseline project plan, Maintaining the project workbook and Communicating the project status .

This phase mainly involves the job of project manager to initiate the execution of project activities, acquire and assign resources, orient and train new team members, keep the project on schedule, and assure the quality of project deliverables. Maintenance of complete records of all project events and communication of complete project plan with the entire team is also done during this phase .

Closing down the Project [10]

This phase involves notification of closure of project to all the interested parties as well as finalization of all records and documents for final review. Review is done to determine the strengths and weaknesses of project deliverables and the processes used. This is followed by the final activity of ensuring that all the contractual terms of the project have been met .

Figure2. shows the steps in which project management should be carried out.

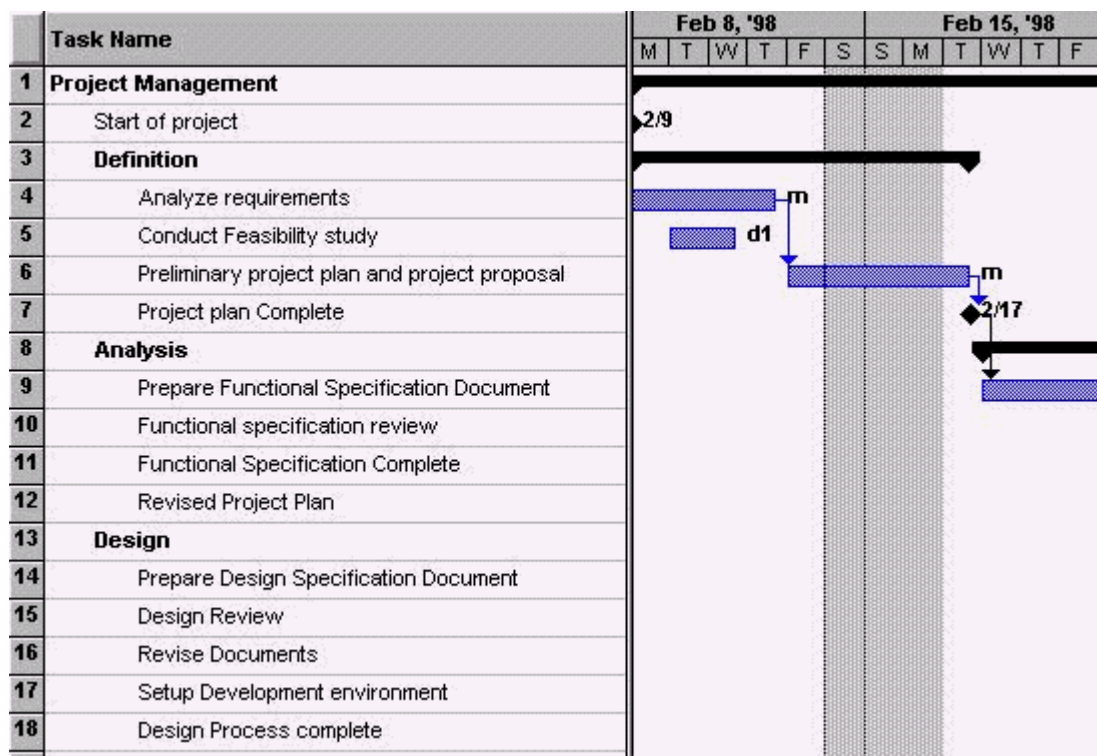


FIGURE 2. STEPS IN PROJECT MANAGEMENT

Implementing

Successful implementation projects require focus, organization, and perspective. Execution of strategic goals is possible by thoroughly understanding the client's need. This can help to leverage industry leading technology to improve efficiency and raise quality [11]. The aim of these processes is to ensure that various project tasks are well coordinated and they meet the various project objectives including timely completion of the project [12].

According to THE CHAOS Report (1994), The Standish Group there are: [\[13\]](#)

The top 5 factors found in successful projects are:

- User Involvement
- Executive Management Support
- Clear Statement of Requirements
- Proper Planning
- Realistic Expectations

The top 5 indicators found in “Challenged” projects are :

- Lack of User Input
- Incomplete Requirements & Specifications
- Changing Requirements & Specifications
- Lack of Executive Support
- Technical Incompetence

Figure3. shows the causes of project failure and success according to the Standish group.

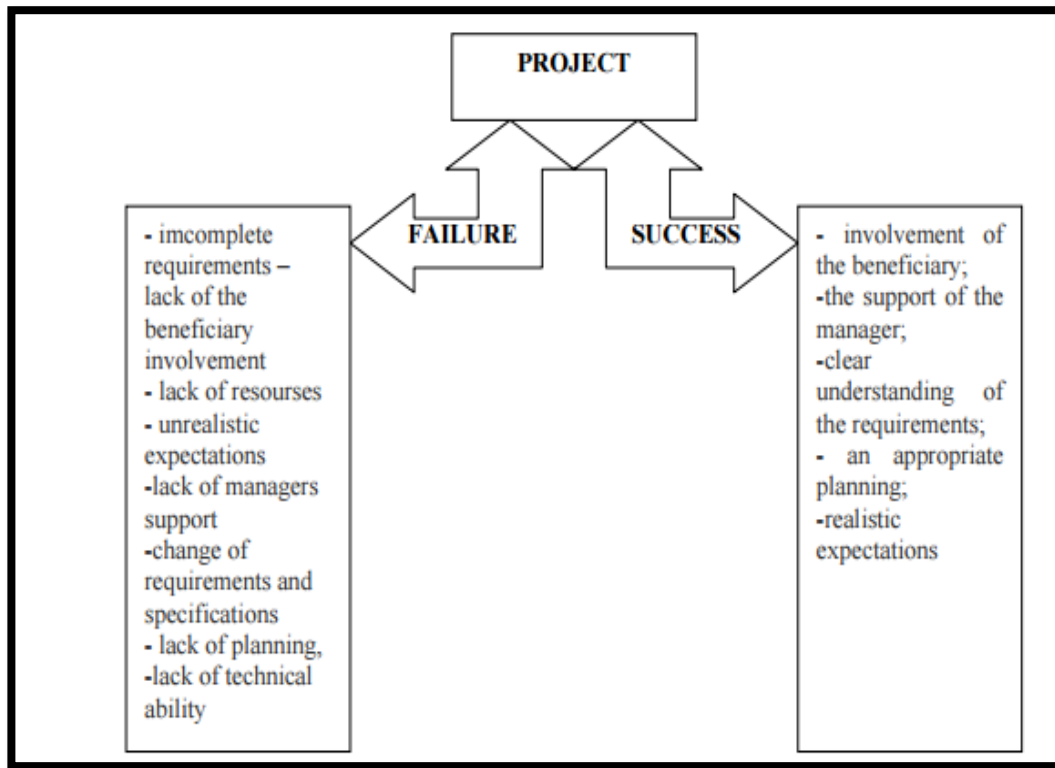


FIGURE 3. MAJOR CAUSES OF PROJECT SUCCESS AND FAILURE

3.0 Research Methodology

3.1 Study Area

- A Multinational Healthcare IT Company in Hyderabad, India

3.2 Study Duration

- 13 February, 2017 to 25 April, 2017

3.3 Study Type

- Cross-sectional study, Descriptive

3.4 Study Design

- Qualitative Study and Quantitative Study

3.5 Sample Size

- 64

3.6 Sampling Technique

- Non-probability convenience sampling

3.7 Data Collection

In this study personal interviews and research surveys were conducted to gather information. In this research, a combination of quantitative and qualitative technique was used in order to collect information. This research used primary data which was collected through interviews with the respondents .

Interview guidelines with basic questions in the interviews was prepared. Semi-structured questionnaire was used and the respondents were not informed about the different heads under which the data would be grouped. This was done to avoid any biased input.

Face to face, telephonic and skype interviews were conducted based on the availability of the respondents. The interview time was approximately an hour, the time varying from 40 minutes to 60 minutes. In addition, audio recording was conducted by a recorder device in order to support arranging the information and to avoid misunderstanding in the future .

The questionnaire had some common questions for all the respondents and some specific questions for each category of employees.

The survey questions were common for all the categories and this was done to identify the key issues that were present in planning and implementation according to the employees based on their experience in the organization.

3.8 Choice of Respondents

The selected respondents belonged to four different departments in the company. The criteria for selection of these employees was that they had at least 1 year experience in the company and were active participants in a project.

The four categories of respondents included: Business Analysts (BA), Developers, Testers and Customer Support and Services (CSS).

16 employees from each category were selected and personal interviews were conducted to provide qualitative context of survey results.

3.9 Data Analysis

The quantitative data (ratings) was initially grouped into five different issues namely Leadership issue, Management process issue, Organization environment issue, Technical system issues and Personnel issues. These were then analyzed as per the rating given and average rating was calculated for each and every issue. The study by Beaumaster (1990) was used as a framework for the analysis [14], [16]

- **Management process issues [15]** mainly involve the operational activities of the organization like planning, budgeting and guidelines.
- **Organizational environment issues [15]** included intangible factors like behavior, change and organization culture.
- **Leadership issues [15]** involved the organization executives' interaction.
- **Technical system issues [15]** considers hardware and software.
- **Personnel issues [15]** of individuals in organization.

The quantitative data was analyzed using MS Excel to calculate average and percentage response

The qualitative data collected through interviews (face to face, telephonic and video conferencing) was analyzed. The process of handling the data in this research was to write down the interviews after conducting them and then read and analyze that information through interpretation .

4.0 Results and Analysis

This section will present the results of the data collected from the respondents who expressed their views on the problematic areas in project planning and implementation in their organization . This analysis is based on the descriptive interview questions asked to the respondents.

4.1 Issues Categorization

Through comprehensive literature research and a careful review, a final set of categories was designed. The final categorizations for use with this study are the issues pertaining to: Leadership, Management Process, Organizational Environment, Technical Systems, and Personnel .

In addition to the breakdown of issues into the types just discussed, they were also separated based on their presence during planning, timely completion, or actual implementation of a project. Many of the issues influenced two or even all three of these areas. Table1. Shows the major issues that were observed during planning, timely completion and implementation of a project .

Table1. shows that interdepartmental coordination, timeframes and scheduling, strategic planning and training were the major issues during these phases of project management.

TABLE 1: MAJOR ISSUES DURING PLANNING, TIMELY COMPLETION AND IMPLEMENTATION OF PROJECT

Issue Type	Project Planning	Timely Completion	Project Implementation
LEADERSHIP ISSUES	Inter-departmental coordination	Inter-departmental coordination	Inter-departmental coordination
	Organizational support	Organizational support	Organizational support
	“Timeframes & scheduling”	Timeframes & scheduling	“Timeframes & scheduling”
MANAGEMENT PROCESS ISSUES	“Strategic planning”	“Strategic planning”	“Strategic planning”
	Budgeting	Budgeting	Budgeting
	Organizational directives	Organizational directives	Organizational directives
	Written guidelines	Written guidelines	Written guidelines
ORGANISATION ENVIRONMENT ISSUES	Organizational culture	Organizational culture	Organizational culture
	internal and external politics	internal and external politics	internal and external politics
	Contracts	Contracts	Contracts
	Changing technology	Changing technology	Changing technology
	External consultants	External consultants	External consultants
TECHNICAL SYSTEM ISSUES	Existing system	Existing system	Existing system
	“Standardization”	Standardization	Standardization
	Compatibility	Compatibility	Compatibility
PERSONNEL ISSUES	Staffing	Staffing	Staffing
	Resistance to change	Resistance to change	Resistance to change
	Training	Training	Training
	Personal issues	Personal issues	Personal issues

4.2 IT Expertise

All the respondents were asked to rate their expertise in information technology on a scale of 0-5, 0 being least proficient and 5 being extremely proficient. For ease of reference this data was then collapsed into three groups: novice (0-1), proficient (2-3), and experts (4-5) .

The table2. shows the breakdown of expertise levels of all the respondents.

TABLE 2: IT EXPERTISE OF EMPLOYEES

IT EXPERTISE LEVEL		
Respondent Type	No. of Responding	Percent Total
Novice (0-1)	0	0%
Proficient (2-3)	30	47%
Expert (4-5)	32	50%
No Response	2	3%
Total	64	

The above table shows the breakdown of expertise levels. 47% respondents viewed themselves as more middle-of-the-road, proficient in their IT knowledge and 50% respondents rated their knowledge as experts. These respondents were mostly developers and testers. However, one of the respondent did not rate his IT knowledge.

The three key research questions of this study focus on the determination of the most problematic issues with regard to IT planning, timely completion, and implementation in their organization . Table3. provides a representation of the responses to these questions.

Respondents were asked to rate each issue on a scale of 0-10 with 0 being not at all problematic and 10 being extremely problematic. For ease of reference the scale responses have been collapsed into three categories where “Not Problematic” represents scales 0-3,

“Somewhat Problematic” represents scales 4-6, and “Highly Problematic” represents scales 7-10 .

Respondents were asked to rate 18 separate issues with regard to information technology planning. Of all of these, the largest number of respondents (56%) as being highly problematic perceived the issue of lack of training . All other issues that were identified as somewhat problematic were: improper timeframes and scheduling (59%), lack of strategic planning (50%), absence of written guidelines and procedures (53%), organizational culture (50%), existing processes and system (53%), adequate staffing (50%) and lack of technological compatibility between existing systems and software (50%).

The interview consisted of two different set of questions, one set of questions were common for all the respondents and the other set was specific for particular department of the respondents.

TABLE 3: LIST OF ISSUES AND THEIR SEVERITY

ISSUE TYPE	NOT PROBLEMATIC	SOMEWHAT PROBLEMATIC	HIGHLY PROBLEMATIC	
	(0-3)	(4-6)	(7-10)	No Response
1. Inter departmental coordination	19%	41%	41%	0%
2. Organizational support	41%	38%	19%	3%
3. Proper timeframes and scheduling	3%	59%	38%	0%
4. Strategic planning	13%	50%	34%	3%
5. Budgeting	31%	22%	13%	34%
6. Organizational directives	34%	41%	19%	6%
7. Written guidelines for every process	9%	53%	38%	0%
8. Organizational culture	22%	50%	25%	3%
9. Internal/external politics	19%	47%	31%	3%
10. Contracts	16%	31%	22%	31%

11. Rapidly changing technology	38%	28%	28%	6%
12. Existing system	28%	53%	16%	3%
13. Standardization	13%	47%	38%	3%
14. Technological compatibility	22%	50%	16%	13%
15. Training	6%	38%	56%	0%
16. Adequate staffing	25%	50%	16%	9%
17. Resistance to change	22%	44%	34%	0%
18. Personal issues	41%	34%	19%	6%

4.3 Planning Process

The first question was about the planning process that is usually followed for each project in their organization. This was done to know whether any brainstorming sessions are done involving all the team members or not. Figure4. shows the results of the planning process followed in the organization.

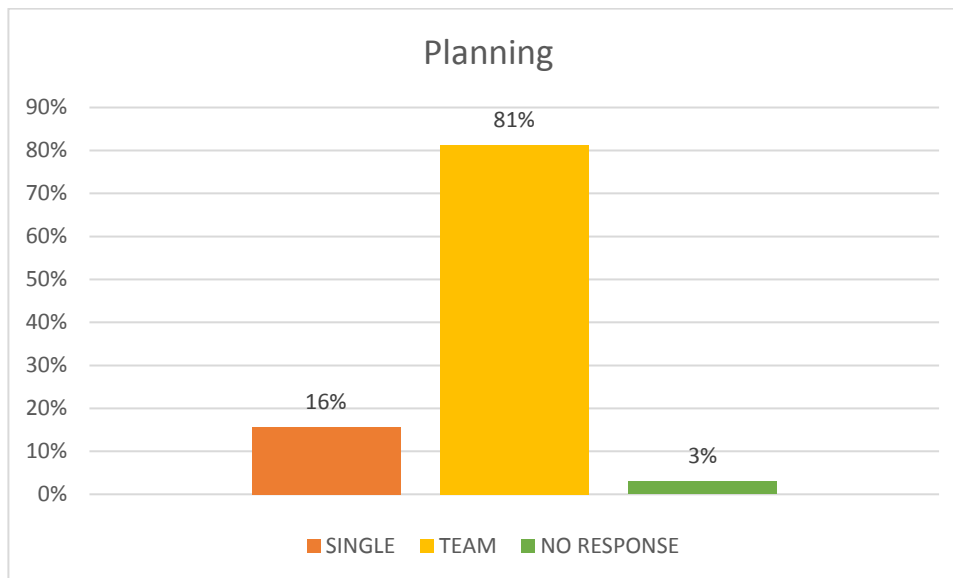


FIGURE 4. RESPONSE OF PLANNING PROCESS

The above figure shows that the whole team majorly does the planning for any project involving the leads from all the departments included in the project. 81% of the respondents replied that planning is a team work.

The second question was whether the planning done for the project is for being formally communicated among the team members or not. Figure5. shows 81% responses pointed towards planning process to be formal. This shows that the overall planning for a project is formally communicated to all the team members involved in the project.

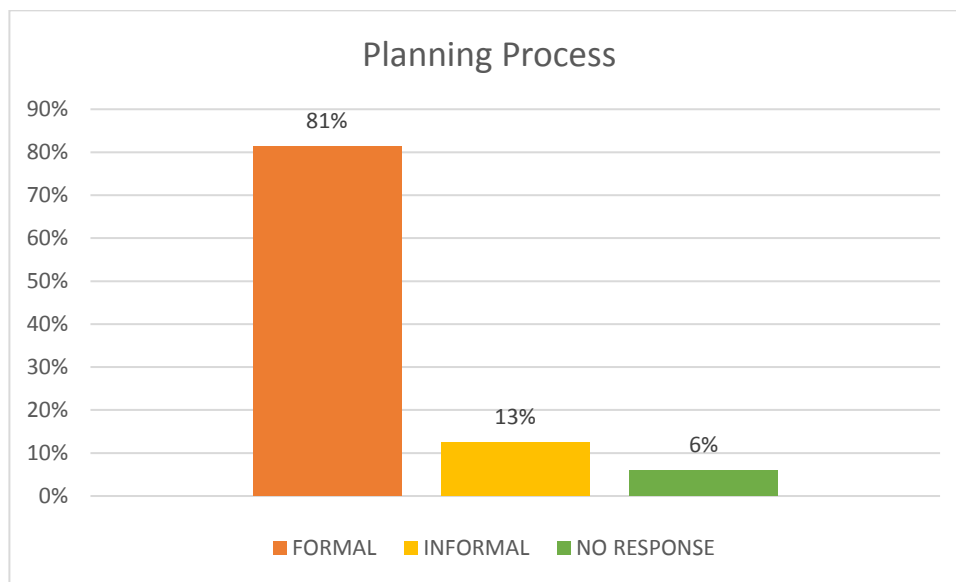


FIGURE 5. RESPONSE OF PLANNING TYPE

4.4 Formal Models

The next question was about formal models of analysis being used in project management or not. 72% respondents replied that formal models of analysis are not being used and 1 respondent did not know about these models being used or not. Figure 6. shows the percentage respondents for use of analysis models.

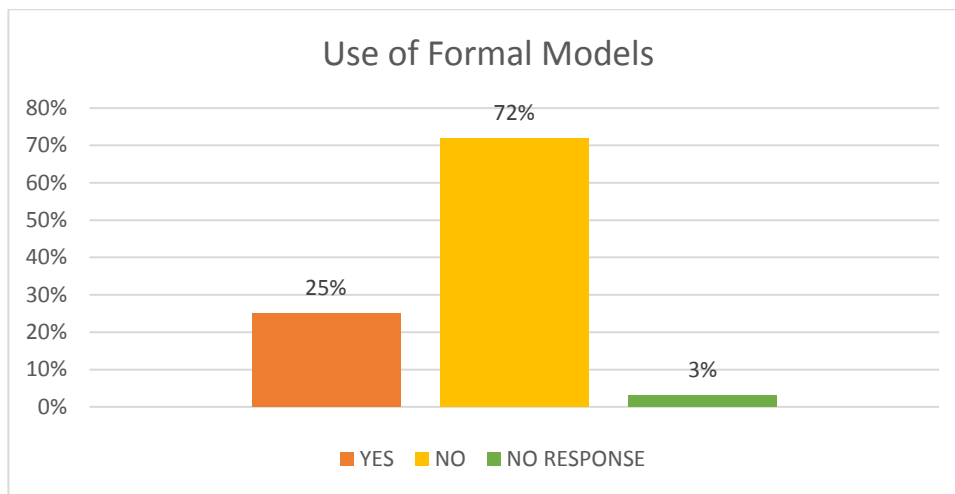


FIGURE 6. RESPONSE OF USE OF FORMAL ANALYSIS MODELS

4.5 User Manuals

An equal number of respondents replied that they are provided with a user manual for proper understanding of a process flow and working culture in the organization. Figure 7. shows the percentage respondents to the question about provision of user manuals by the organization. 2 respondents had no idea about the user manual, so they did not respond to the question.

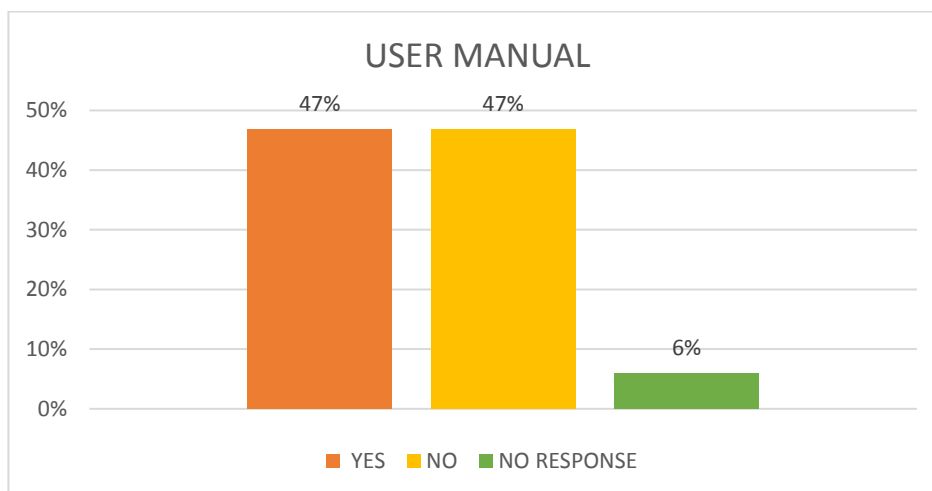


FIGURE 7. RESPONSE OF PRESENCE OF USER MANUAL

The above figure shows that an equal percentage of respondents believe that user manuals are being used in the organization. 47% believed that user manual is present and an equal number responded that user manual is absent. 6% of the respondents had no idea about the user manuals in the organization.

4.6 Training

The response to the question whether regular training is given on current aspects and technology was that the employees were not getting any trainings to upgrade their knowledge about new technology. Figure 8. shows the percentage respondents to the above question.

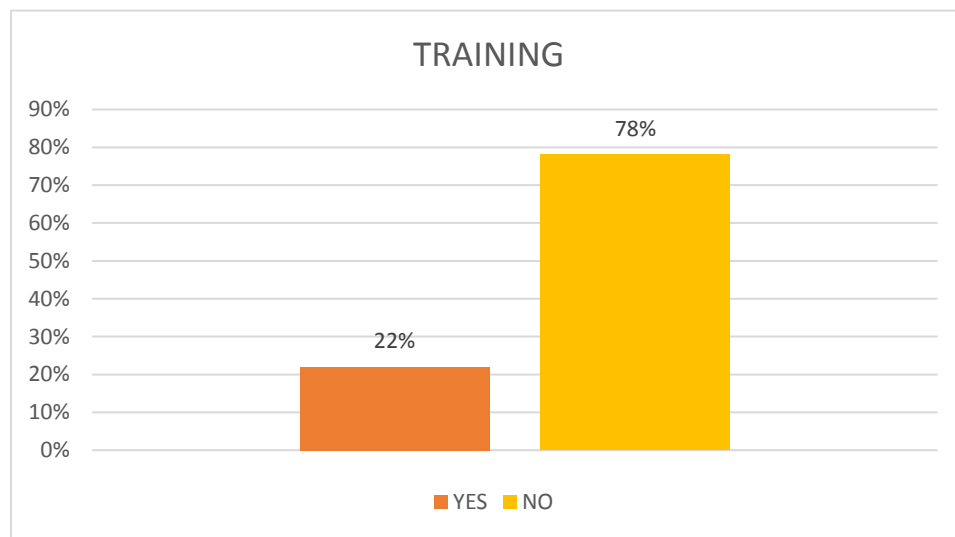


FIGURE 81. RESPONSE OF PROVISION OF TRAINING

4.7 Planning Effectiveness

The next question was asked whether the respondents perceived their organization's planning approach to be effective or not. 41% of the respondents found their organization's planning approach to be effective. However, 2 respondents found it to be partially effective and 1 respondent did not respond. Figure 9. shows the percentage respondents who found planning approach to be effective.

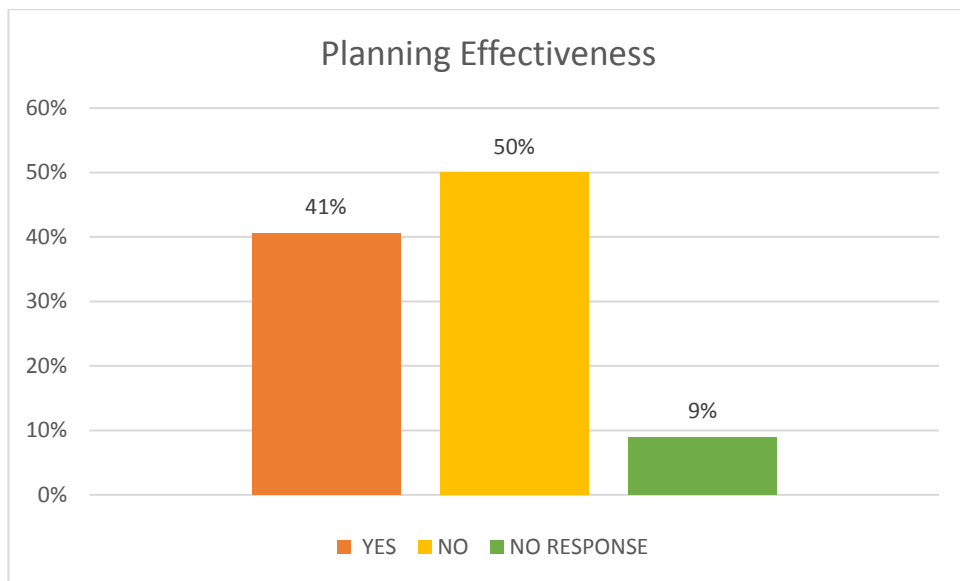


FIGURE 92. RESPONSE OF EFFECTIVE PLANNING APPROACH

The following questions were related to process effectiveness and required all respondents to rate effectiveness on a scale of 0-10, 0 being least effective and 10 being highly effective. For ease of reference scaled data has been collapsed into three groups: ineffective (0-3), somewhat effective (4-6), and highly effective (7-10). Figure 10. shows the results of employee's perceptions of their organizations project planning effectiveness: 3% of the respondents rated their planning process as ineffective, 72% were seen as somewhat effective, and only 25% of the respondents rated their process highly effective .

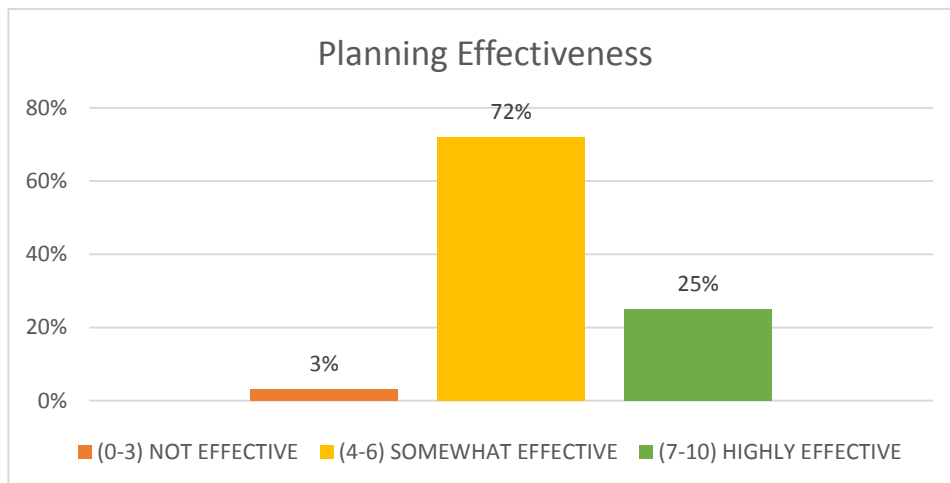


FIGURE 103. RESPONSE OF EXISTING PLANNING APPROACH

4.8 Implementation Effectiveness

Figure 11. provides a breakdown of the perceived effectiveness for respondent organization's project implementation: 9% view their implementation process as ineffective, 66% see theirs as somewhat effective, and only 25% rate their project implementation as highly effective .

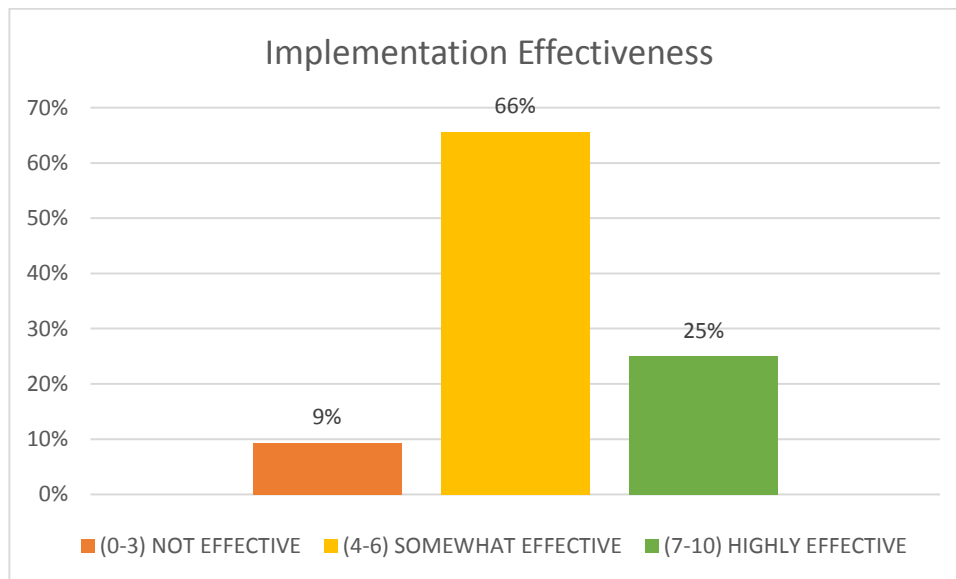


FIGURE 11. RESPONSE OF EXISTING IMPLEMENTATION APPROACH

As an additional source of information, respondents were also asked how they might improve their organizations existing IT planning approach—regardless of its perceived effectiveness .

Not all of the employees responded to this question; however, a content analysis was performed on the received responses. The results of this content analysis are :

- There should be a mandatory handover meeting between sales persons and CSS team/ project manager with a defined methodology.
- BA and developers should be present during requirement gathering.
- Review process has to be improved at all levels of testing and development.
- Employee interaction, communication, training, involvement and encouragement should be done.
- Proper documentation about the department work flow and processes should be present.
- The planning process should be transparent and every team member should be involved.
- User acceptance test (UAT) scenarios should be prepared.
- Work breakdown structure (WBS) should come from the manager.
- Comparatively the planning process has improved but requirement understanding should be properly documented so that interpretation by each person in the project team should be same to meet customer expectation.

4.9 Empirical Findings

The findings of other open ended questions asked to the employees during interview were:

- There were many **recurrent gaps in project management** of which inter and intra departmental coordination, effort estimation and changing framework came out to be the major ones. Other gaps included no common pattern of documentation across teams, misinterpretation/information transfer gap, no coordination between Product Management team and Product Development team.
- When asked about the **support given by the senior management**, the data revealed that the management does not realize the ground reality and focusses just on product delivery and not the process quality.
- Some of the **major challenges which the employees faced** included improper time framing, changing requirements, lack of training, coordination between different departments and ego clashes between personnel.

- **Key issues identified during planning** of any project were no continuity of same set of resources for a given project. This creates lag in timeframes. Requirement changes are not documented properly and WBS is not provided by the manager themselves.
- Figure12. shows the cause and effect relationship of issues in planning and implementation.

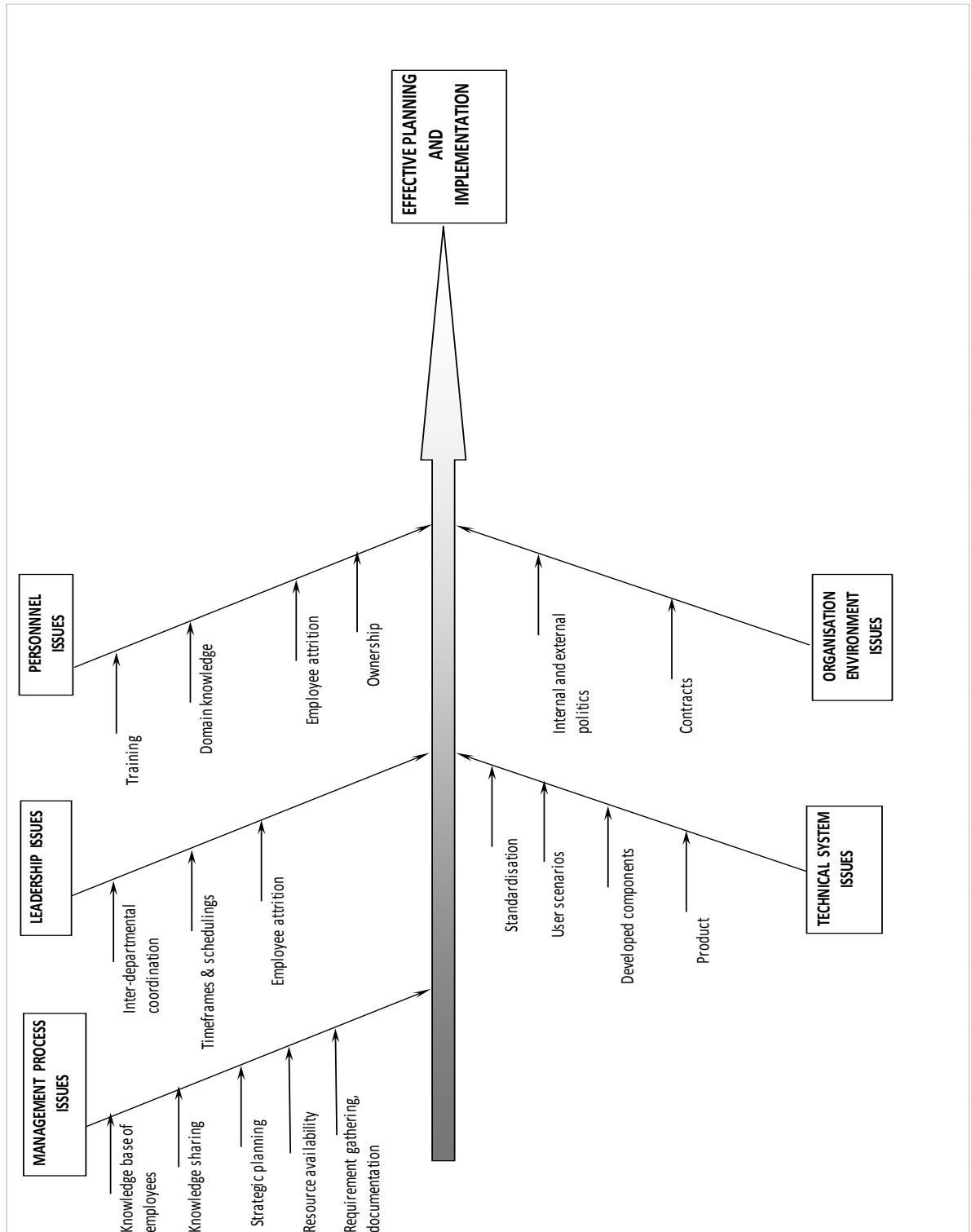


FIGURE 124. FISH BONE DIAGRAM TO SHOW RELATIONSHIP IN ISSUES IN PLANNING AND IMPLEMENTATION

5.0 Conclusion and Recommendation

In this section each area is addressed for the purpose of answering the three main research questions. The primary focus of this study was to determine what issues employees perceived as being the most problematic issues with regard to project planning, timely completion and implementation. Each stage in the planning and implementation process was viewed individually with regard to its fundamental issues in order to better ascertain the singular impact of each one on the process. Following is a brief discussion of the findings of this study with regard to the three main research questions .

5.1 Issues Related to IT Project Planning

5.1.1 Question: What are the most problematic issues with regard to planning of project ?

- Inter-departmental coordination
- Time-frames and scheduling
- Strategic planning
- Standardization

Interdepartmental coordination

Interdepartmental coordination was rated highly problematic with regard to IT project planning by 69% of the survey respondents. In the world of project management, the degree of success is directly linked to achieving cooperation between team members, managers, and departments and outside consultants and the key to successful cooperation is ongoing, wide-ranging communication .

Due to lack of interdepartmental communication similar programs are developed for different modules of HIS. There is duplication of documentation which should be minimized by improving the communication between different departments.

Timeframes and Scheduling

63% of the survey respondents found timeframes and scheduling of the project as another planning issue. The work breakdown structure (WBS) is the foundation of an effective project management plan. It identifies all the tasks and activities that must be accomplished for a project to succeed. Schedules provide the framework for accomplishing the tasks and activities of the WBS. Dependencies between the various tasks and activities must be understood to ensure the project tasks are accomplished at the appropriate time in order to complete the project .

Time estimates need to be as realistic as possible. Time estimating is a best-guess using the available information, and establishing the right climate for estimates is essential to ensure accuracy . Scheduling and time estimates should be done after careful understanding requirements and existing capacity and competency.

Strategic Planning

Lack of strategic planning was also an issue perceived by 66% of the respondents. According to the respondents there is no strategic/formal plan for a project. Strategic planning for project management, combined with a good project management methodology, can compress the gaps on time, cost, and quality. Strategic planning for excellence in project management needs to consider all aspects of the company: from the working relationships among employees and managers and between staff and management, to the company's corporate structure and culture .

Standardization

50% of the responses showed that there is lack of standardization in a project management. Standardization in project management can greatly reduce the errors in planning and execution. Because the process is reviewed, analyzed and improved as needed, the teams are

armed with the best strategy available at the time, and leverage tried and true best practices and lessons already learned.

It improves reliability, work efficiency and consistency in work.

5.1.2 Question: What are the most problematic issues with regard to timely completion of project ?

- Strategic planning (84%)

5.1.3 Question: What are the most problematic issues with regard to implementation of project ?

- Inter-departmental coordination (69%)
- Time-frames and scheduling (66%)
- Strategic planning (66%)
- Training (60%)

Training

- Training was one major issue which came up during the study. Respondents appreciated the “brown bag session”, a new initiative of the company for knowledge sharing. But about 56% of the respondents in the study felt the need of regular and effective training. Many respondents said that they needed some training to have a basic knowledge of the nature of task they are doing. This will also bring them to a common platform along with other employees.
- Another concern was that even if some training is provided, there is no one to look upon after the training is over. No training is so long to answer every question. Someone should be there to whom they can contact when they face problem applying the knowledge they gained through training. There is no follow up after the training is over, as if the concepts are being applied or not.

- Respondents also said that some training is provided by the company, they can't attend it because they are not allowed to go by their seniors as they want their task to be completed first. This approach should be corrected as we should realize that with proper training only can we achieve an overall success in our project and build a strong team as well. This issue can be solved by video recording the training sessions so that each employee can view it whenever they are free from work. This would allow them to complete their tasks as well as benefit from the training sessions.
- Since team members do not have adequate knowledge about the domain background they frequently come up with doubts. This however can be managed by giving them training internally.

Other issues that were observed through the response in interviews were:

Requirement Changes

"Stable requirements are the holy grail of software development." (Mc Connell, 1993)

Earlier, stable requirements were seen as a pre-requisite for software development project. But with rapidly changing technologies and cutting edge competition, most of the IT companies have given up looking for the holy grail of stable requirement.

Changing requirements is now an accepted fact for software development. In fact, there are now books and literature available on "embracing changes".

Reasons for requirement changes

Any type of communication requires at least two parties: sender and receiver. The fact here is that, the receiver of the information decides the message content. No matter how hard or how easily the sender tries to explain the fact, it is the receiver who interprets the message. Taking this into consideration, same applies in communication between client-BA & BA-developer.

While communication, we may assume that the developer has a very little domain knowledge and to compensate that we write a lengthy document. This may pose a risk that the developer

may not read the whole document and may miss out certain important points. Secondly, if we think that the developer has a good domain knowledge and give bare essentials, he/she may work on his own assumptions and that we are completely relying on his knowledge and the cycle continues. This situation may happen with anyone including the customer, BA, developer and even managers commissioning the project.

It is important to note here that, it is not only the customer or the manager who change the requirement. Sometimes it is the developers who while coding will realize that it is not possible to meet all the fanciful promises made by the sales team to the customer or the vague requirement document. Clients may be told about the fancy software solution and may also be written in a beautiful document explaining how things will execute. But when it comes to real execution of codes, these may not happen. Hence, there is a requirement of a continuous feedback of the developers to the customer over system requirements.

When we start writing the specification, we start with the “nearest shore”, which includes the most obvious requirements, which were discussed before starting the project, already documented and which people think at early stages. As the project proceeds, all the people involved get more understanding of the situation in software and the company, revealing things with greater value for the system. This also results in reprioritizing and changing the requirements again .

What can we do about it?

First, the software development companies need to change their approach towards changing requirements. We need to stop taking requirement changes as a problem and take it as an opportunity. Being rigid about thinking changes as problem will bring two things for the company- first, the organization will cease to change which is very harmful for the business. Secondly, any company can copy and implement our solution as they are static and can be easily revealed.

Requirement documents are a snapshot of the things and processes at the time when they are written. However, if project has started on 1st July and then we write the documents for one month and spend the next 6 months on its development, requirements are definitely going to be changed. Therefore, the requirement documents should be live. We may not accept each and every change that is asked for but keeping them aside may lead us missing on some important points.

This being said, it is also important to keep in mind that we should not simply take requirement changes that is asked for or suggested, it needs to be analyzed and prioritized. This change should also be effectively communicated between departments through proper documentation and physical meetings. This has two benefits, first the message is sent effectively and secondly meeting with different people involved in a project and discussing what led to changes and how will it help the project will instill confidence and team spirit amongst different team members.

Proper Process and Written Guidelines

Having a proper process and guideline helps build high quality software. When a team undertakes a project, it refers to a standardized and documented methodology which has been used on a similar project or which is commonly used in the organization. These also help the managers to effectively run and manage the process, make it more stable and even have a control over the entire activity. A well written guideline provides a way of communication and applies consistent standards and practices throughout.

Having a guidelines is of no use if it is not being circulated and read by the employees. The guidelines or Standard Operating Protocols (SOPs) should be given before starting a project or any job. Advantages of having good procedures are-

- save time and mistakes
- reduce training costs

- ensure consistent results
- empower the workforce
- get read and used
- support quality goals

Existing System & Technological Compatibility

Existing system and technological compatibility are problematic issues according to 53% and 50% of respondents respectively. According to them, various products were not compatible with each other in the company and their components cannot be used as such. The software is not tested in the end user's environment and again compatibility issue arises. Since the existing system of software and the processes are not uniform throughout the organization, these problem will be there. To overcome this, all new projects and processes should be based on a single framework and platform.

Adequate Staffing

50% of the respondents said that the staffing was not adequate in the organization. Many of them lack proper domain knowledge and hence the efficiency is reduced. The study also revealed that contract employees do not take the ownership and accountability for a given task. They spend their initial time in understanding the processes and then start with the work. And when the actual work gets started they are about to leave. This causes uncertainty in the team and as a result the efficiency reduces.

This issue can be solved by hiring people with proper domain knowledge and providing them with proper training.

Leadership Issues

Out of all the five issue categories, it was observed that the leadership issues had the highest average of response by the employees. Leadership issues reflect those areas that require the interaction, commitment and direction of the organization's chief executive, such as interdepartmental coordination and administrative support .

6.0 Limitations

One of the inherent limitations in survey research is the subjectivity of each respondent. No matter how carefully written or completely tested, each survey is vulnerable to differing interpretations of the questions .

Because of the descriptive purpose of this survey and because the main focus of this research was not to statistically prove relationships between issues but to determine the most problematic ones, this particular limitation is recognized and accepted in this study. In addition, it is possible that some responses were the result of defensiveness, apathy, or ignorance of a particular respondent .

Another limitation may be derived from distortion of the perceptions of individuals about information technologies and their relationship to the given department. In this particular study it was impossible to assess the influences of organizational environments, the personalities of the respondent, and any external factors .

This survey is very small and there is a lack of validation of survey responses from a broader sampling across the organization. In any event, this study is diverse enough to derive some significant conclusions with regard to planning and implementation. However, this will not permit the generalization of outcomes to larger perspective.

The survey instruments themselves suffer from measurement and sampling problems which may include: criteria, content, construct validity, and reliability of the instruments themselves .

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8.0 Appendices

The following questionnaire was used as data collection tool during personal interview and survey study:

8.1 Common Questionnaire for survey study:

For the following three sections please select the issues, how problematic the issues listed are with regard to the three processes.

(1) **Achieving a formal planning process .**

Interdepartmental Coordination _____

Timeframes and Scheduling _____

Lack of a Strategic/Formal plan _____

Politics, Internal/External _____

Organizational Directives _____

Individual Support _____

Organizational IT Expertise _____

Existing Systems _____

Individual IT Expertise _____

Organizational Culture _____

Written Procedures/Guidelines _____

Standardization Issues _____

Fiscal/Budgeting Issues _____

Rapidly Changing Technology _____

Lack of a Planning Model Personnel Issues _

Internal Leadership

Organizational Support _____

Contracts _____

Other: _____

(2) Achieving a timely completion of a project :

Lack of a Strategic/Formal plan _____

Politics, Internal/External _____

Organizational Directives _____

Individual Support _____

Fiscal/Budgeting Issues _____

Organizational Culture _____

Written Procedures/Guidelines _____

Organizational Support _____

Other: _____

(3) Implementation (once they have been planned for and funded) :

Interdepartmental Coordination _____

Timeframes and Scheduling _____

Lack of a Strategic/Formal plan _____

Politics, Internal/External _____

Organizational Directives _____

Individual Support/Agendas _____

Organizational IT expertise _____

Existing Systems _____

Individual IT Expertise _____

Organizational Culture _____

Compatibility Issues _____

Standardization Issues _____

Fiscal/Budgeting Issues _____

Organizational Support _____

Rapidly Changing Technology _____

Personnel Issues _____

Training _____

Internal Leadership _____

External Consultants _____

Adequate Staffing _____

Resistance to Change _____

Other : _____

Please add any additional comments, explanations, or issues below .

Please answer the following questions in either “Yes” or “No”

1. Is there inter departmental coordination?
2. Is there organizational support?
3. Are there proper timeframes and scheduling?
4. Is there a strategic planning?
5. Is budgeting done properly during a project?
6. Are there organizational directives?
7. Are there written guidelines for every procedure or step?
8. Is the organizational culture good?
9. Is there internal/external politics?
10. Are the contracts properly made?
11. Is changing technology a stress factor?
12. Is the existing system (technology) good?
13. Are the process standardized?
14. Are there technological compatibility issues?
15. Is regular training provided?
16. Are you okay with the current system or want a change?
17. Do you want a leadership role and will you justify it?

8.2 Interview questions common for all employees

- Is the planning done by a single person or the whole team?
- Is your planning process formal and informal?
- How would you improve your organization’s existing planning and implementation approach ?
- Do you use formal models for the analysis and implementation?

- Does the organization provides any user manual or troubleshooting manual for you?
- Considering your answers to above questions, would you say that your overall planning approach for any project is effective ?
- How important is the presence of a basic framework in designing and planning a project?
- Are there any recurrent gaps in the company which you feel come in every project and should be closed for an effective and timely completion of project?
- Does your organization have a strategic contingency plan?
- How important is the support given by the senior management to you and how much do you get from your seniors?
- Do you get regular training on the current aspects and technology?
- What is the biggest problem/challenge faced by you during planning and implementation?
- How would you rate your own personal expertise with regard to information technology ? (0-5)
- How would you rate your organization's planning effectiveness ? (0-10)
- How would you rate your organization's implementation effectiveness ? (0-10)
- How do you find Napier different from other healthcare IT companies ?

8.3 Interview Questions for Business Analysts

- How difficult is to meet the expectation of the customer during planning and implementation?
- What measures are taken to fulfill them?
- Do you follow a proper written procedure/guidelines for the entire planning and implementation process?
- List three issues which you feel are the most important with regard to it planning and implementation ?
- Do you have requirement review process in place?
- Is the walkthrough process efficient?
- If no, what are the issues faced?

8.4 Interview Questions for Developers and Testers

- Do you follow a proper written procedure/guidelines for the entire process?
- Are you provided with proper modelling diagrams?
- How would you rate your domain knowledge expertise within 0-10.?
- Do you get an elaborate and detailed user requirement?
- Do developers and tester working in coordination?
- Does the inputs from other department hamper your time efficiency?
- Do you follow any quality check standards through your process?
- What according to you does the management focusses on? Product or the process?

8.5 Interview Questions for CSS Department

- How difficult is to meet the expectation of the customer after implementation?
- What measures are taken to fulfill them?

- Does the organization provides any user manual or troubleshooting manual for the customer?
- How would you rate your efficiency for customer care support?
- How do you handle change management in the enterprise and what challenges are faced during the process?