

**Managing End User Resistance of ERP Implementation**  
**(Case Study – Ceylon Petroleum Storage Terminals**  
**Limited)**

D.D.C.A. Perera

(169122D)

Degree of Master of Business Administration in Information Technology

Department of Computer Science and Engineering

University of Moratuwa

Sri Lanka

June, 2018

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## DECLARATION

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Chathumi Perera

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.....

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The above candidate has carried out research for the Master's thesis under my supervision.

.....

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## ABSTRACT

Enterprise Resource Planning (ERP) systems are becoming mature technologies to support inter and intra company business processes. However, one of the factors frequently cited as the major reason for the failure of ERP system in post implementation is “User Resistance”. This research discusses on user resistance, the impact of user resistance during the implementation of ERP system and how to manage user resistance. The theoretical part of the dissertation is aimed at gaining information about user resistance, and the effects of user resistance during the implementation of the system, and also in the post-implementation. Literature suggests that the user resistance of individual level is the key to the successful implementation of system projects.

Mixed approach is adopted which mainly uses face-to-face interviews as the evidence collection method, while using questionnaires as an add-on tool to support the research questions identified within the study. The identified data are ensured as reliable and trust worthy to make some recommendations to the public as research findings.

This study identifies that the implementation failure can be due to several reasons. Further, it interprets the significance of the desire and acceptance of the end user equivalent to the use of effective technology and processes. This can be called as end user resistance in system implementation. To address the issues arisen due to end user resistance and to build trust; communication, training, end user involvement and management participation can be the most effective strategies.

These findings can be applied by project teams during the implementation and post implementation of the ERP projects. Hence, this will suggest a necessary framework to ensure the success of project implementation with the relevant change management strategies.

*Key words:* Resistance, ERP, implementation, training, communication

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# TABLE OF CONTENTS

DECLARATION.....	I
COPYRIGHT STATEMENT .....	II
ABSTRACT.....	III
ACKNOWLEDGEMENT.....	IV
TABLE OF CONTENTS .....	V
LIST OF FIGURES .....	VIII
LIST OF TABLES .....	X
LIST OF ABBREVIATIONS.....	XII
1. INTRODUCTION .....	1
1.1 Background.....	1
1.1.1 Motivation.....	2
1.1.2 Research Scope .....	2
1.2 Problem Statement .....	2
1.2.1 Research Question.....	3
1.2.2 Research Objectives .....	3
1.2.3 Research Significance .....	3
1.2.4 Limitations of the study .....	4
1.2.5 Outline.....	4
2. LITERATURE REVIEW .....	5
2.1 Introduction .....	5
2.2 Insights from ERP based research.....	5
2.2.1 Overview of ERP systems.....	5
2.2.2 The evolution of ERP .....	6
2.2.3 Advantages and Disadvantages.....	7
2.2.4 Approach to ERP implementation .....	8
2.2.5 Factors for successful ERP system implementation .....	9
2.3 Public sector vs. Private sector in terms of ERP implementation .....	11
2.4 Failure or success factors of SAP ERP implementation .....	12
2.5 User resistance.....	14
2.5.1 Reasons for user resistance .....	17
2.5.2 Resistant Behaviors / Manifestations of resistance.....	21
2.6 User Resistance Management Strategies.....	22

2.6.1	Participative strategies .....	22
2.6.2	Directive strategies:.....	23
2.6.3	Strategy Implementation framework.....	24
3.	RESEARCH METHODOLOGY .....	26
3.1	Introduction .....	26
3.2	Research Problem.....	26
3.3	Research Design .....	27
3.3.1	Case Study Approach.....	27
3.3.2	Mixed Approach.....	28
3.4	Population and Sample .....	29
3.5	Research Method .....	30
3.5.1	Interviews .....	31
3.5.2	Questionnaire .....	31
3.6	Process of Data Collection .....	33
3.6.1	Interview Procedure .....	33
3.6.2	The procedure of the questionnaire.....	34
4.	DATA ANALYSIS .....	35
4.1	Data Preparation for Analysis .....	35
4.2	Interview Data Analysis .....	35
4.3	Survey Data Analysis .....	47
4.3.1	Lack of Education and User training .....	48
4.3.2.	Change in job content.....	50
4.3.3	Lack of communication between top-management and end users.....	52
4.3.4	Lack of user involvement in the development process .....	54
4.3.5	Usability issues and resistance to technology .....	56
4.3.6	User Expectations.....	58
4.3.7	Working Environment / User support.....	60
5.	RECOMMENDATIONS AND CONCLUSION.....	62
5.1	Discussion of research findings.....	62
5.1.1	Lack of communication between top management and end users.....	62
5.1.2	Lack of user involvement in the development process .....	62
5.1.3	Changes in job content .....	63
5.1.4	Lack of training and education.....	63



5.1.5	Usability issues and resistance to technology .....	63
5.1.6	User expectations .....	64
5.1.7	Changes in working environment .....	64
5.2	Recommendations .....	65
5.2.1	Lack of communication between top-management and end users.....	65
5.2.2	Lack of user involvement in the development process .....	65
5.2.3	Change in job content.....	66
5.2.4	Lack of training and education.....	66
5.2.5	Usability issues and resistance to technology .....	66
5.2.6	User expectations .....	67
5.2.7	Changes in working environment .....	67
5.3	Research limitations .....	67
5.4	Future research .....	68
5.5	Conclusion.....	69
REFERENCES .....		70
APPENDIX A: INTERVIEW QUESTIONS .....		73
APPENDIX B: QUESTIONNAIRE .....		75
APPENDIX C: PILOT INTERVIEW QUESTIONS AND RESULTS .....		82

## LIST OF FIGURES

Figure 2.1: Evolution of ERP.....	6
Figure 2.2: Reasons for implementing ERP.....	12
Figure 2.3: Level of customization.....	13
Figure 2.4: Implementation Outcome.....	13
Figure 2.5: Overall experience with ERP vendors.....	14
Figure 2.6: User resistance Model.....	16
Figure 3.1: Research Design.....	30
Figure 3.2: Selection of sample.....	31
Figure 3.3: Research approach.....	31
Figure 4.1: Analysis of phrase 1.....	35
Figure 4.2: Analysis of phrase 2.....	36
Figure 4.3: Analysis of phrase 3.....	36
Figure 4.4: Analysis of phrase 4.....	36
Figure 4.5: Analysis of phrase 5.....	37
Figure 4.6: Analysis of phrase 6.....	37
Figure 4.7: Analysis of phrase 7.....	37
Figure 4.8: Analysis of phrase 8.....	38
Figure 4.9: Analysis of phrase 9.....	38
Figure 4.10: Analysis of phrase 10.....	38
Figure 4.11: Analysis of phrase 11.....	39
Figure 4.12: Analysis of phrase 12.....	39
Figure 4.13: Analysis of phrase 13.....	39
Figure 4.14: Analysis of phrase 14.....	40
Figure 4.15: Analysis of phrase 15.....	41
Figure 4.16: Analysis of phrase 16.....	41
Figure 4.17: Analysis of phrase 17.....	41
Figure 4.18: Analysis of phrase 18.....	42
Figure 4.19: Analysis of phrase 19.....	42

Figure 4.20: Analysis of phrase 20.....	42
Figure 4.21: Analysis of phrase 21.....	43
Figure 4.22: Analysis of phrase 22.....	43
Figure 4.23: Analysis of phrase 23.....	43
Figure 4.24: Analysis of phrase 24.....	44
Figure 4.25: Analysis of phrase 25.....	44

## LIST OF TABLES

Table 2.1: Reasons for user resistance categorization.....	17
Table 2.2: Literature sources for user resistance reasons.....	19
Table 2.3: Resistance Behaviors.....	21
Table 2.4: participative strategies.....	23
Table 2.5: Directive strategies.....	24
Table 4.1: Reasons for user resistance.....	41
Table 4.2: Change management strategies.....	45
Table 4.3: reliability analysis of education and training.....	49
Table 4.4: Frequency distribution of education and training.....	49
Table 4.5: Correlation analysis of education and training.....	49
Table 4.6: Regression analysis of education and training.....	50
Table 4.7: Reliability analysis of change in job content.....	51
Table 4.8: Frequency distribution of change in job content.....	51
Table 4.9: Correlation analysis of change in job content.....	51
Table 4.10: Regression analysis of change in job content.....	52
Table 4.11: Reliability analysis of lack of communication.....	53
Table 4.12: Frequency distribution of lack of communication.....	53
Table 4.13: Correlation analysis of lack of communication.....	53
Table 4.14: Regression analysis of lack of communication.....	54
Table 4.15: Reliability analysis of lack of user involvement.....	55
Table 4.16: Frequency distribution of lack of user involvement.....	55
Table 4.17: Correlation analysis of lack of user involvement.....	55
Table 4.18: Regression analysis of lack of user involvement.....	56
Table 4.19: Reliability analysis of usability issues.....	57
Table 4.20: Frequency distribution of usability issues.....	57
Table 4.21: Regression analysis of usability issues.....	58
Table 4.22: Reliability analysis of user expectations.....	59
Table 4.23: Frequency distribution of user expectations.....	59

Table 4.24: Correlation analysis of user expectations.....	59
Table 4.25: Regression analysis of user expectations.....	60
Table 4.26: Reliability analysis of working environment.....	61
Table 4.27: Frequency distribution of working environment.....	61
Table 4.28: Correlation analysis of working environment.....	61
Table 4.29: Regression analysis of working environment.....	62
Table C.1: Pilot interview results on reasons for user resistance.....	82
Table C.2: Pilot interview results on change management strategies.....	83

## **LIST OF ABBREVIATIONS**

CPSTL	- Ceylon Petroleum Storage Terminals Ltd.
ERP	- Enterprise Resource Planning
FI	- Finance
HR	- Human Resources
IT	- Information Technology
MM	- Material Management
PP	- Production and Planning
ROI	- Return On Investment
SAP	- Systems, Applications, and Products for Data Processing
SD	- Sales and Distribution
SPSS	- Statistical Package for the Social Sciences

# 1. INTRODUCTION

## 1.1 Background

With the modern technology and expanding businesses most of the companies tend to reduce cost and improve customer service. Hence, most of the legacy systems are abandoned and the companies are moved into ERP systems. These systems are supported for the modern business processes and the management and further all the business processes are integrated with the system.

During the 1990's ERP software was first adopted by the organizations to integrate their main business processes and to collaborate with customers and suppliers. At the same time, these implementations tend to fail easily and this will raise the need of analyzing the reasons for those subtle failures. Understanding and analyzing the risk factors has become a leading topic in previous research since implementation phase of an ERP system is a complex process and this phase needs more technical expertise as well as business expertise with effective change management.

In most cases successful exploitation of technology occurs at the individual level as the new technology is operated by an individual. Therefore, the usage of the new technology completely depends of the desire of the user. This also applies for ERP implementation and it leads to analyze how to enhance the desire of the individual on system use. This has a direct impact on productivity of the employee and it is the fundamental measure of the contribution of the technology. Based on the huge investments on the technology, frequently ROI has been minimal. The main reason is the resistance of the employees to adapt to the new technology to fully utilize the potential of the technology.

This research is primarily focused on the Ceylon Petroleum Storage Terminals Limited (CPSTL), Kolonnawa in Sri Lanka. This organization has implemented SAP ERP system in 2008. Moreover, change requests are still progressing towards the modules mainly sales and distribution, inventory management and finance. Further HR module and production is still in initial stages of implementation which is requirement gathering. The main reasons for this delay can be identified as ambiguous requirements, user resistance, less experience and education, etc.

As per the discussions had with the IT department of CPSTL, user resistance could be one of the primary reasons for the failure of the ERP implementation in CPSTL and other public and private sector organizations. Therefore, this research addresses the resistance to change in ERP implementation and the identified change management initiatives for CPSTL.

### **1.1.1 Motivation**

Most of the researches have explored the reasons for ERP implementation failure. All of them have identified end user resistance as a salient reason for the failure of the ERP systems and hence needs to be understood and managed. While previous researches identified the reasons for user resistance, there are gaps of evaluating user understandings of the new change and resisting it.

This research is mainly focused on CPSTL, Kolonnawa, Sri Lanka. They have implemented SAP system in 2008 with the main functional modules, Sales and Distribution, material management, Finance, Human Resources and Production. Currently CPSTL is using only three (3) functional modules, SD, MM and FI. Though the implementation phase is completed, still there are change requests for the current functionalities in SAP for those three (3) modules.

Apart from the above three (3) modules HR and PP modules are still in the configuration phase. It is identified by the IT department that the end user involvement is not sufficient enough for the full configuration of the system and for the change requests. As per the current experience while working at CPSTL as a Software Engineer, it is evident that the user resistance has been a negative impact on the implementation delays and failures. Motivated thus, this research is conducting a deep analysis on user resistance, change management strategies and how to reduce user resistance.

### **1.1.2 Research Scope**

User resistance is one of the primary reasons for the failure of the ERP implementation. Therefore, this research mainly focuses on the reasons for user resistance, impact of the resistance for ERP implementation failures and strategies to overcome this issue. Moreover, the employees in semi-government organizations like CPSTL have a considerable amount of resistance when compared to private sector organizations. Therefore, this research has a limited scope to identify user resistance and mitigating strategies in semi-government organizations.

Since this is a case study for CPSTL, the sample will be the administrators, consultants, software engineers and the system users of the SAP ERP system. Currently, around one-hundred and fifty (150) users are using the system for their daily transactions and around twenty (20) employees are working as administrators, consultants, and software engineers.

## **1.2 Problem Statement**

ERP is considered as packaged software for many enterprises which imposes changes on users at different levels and different areas. Business involvement with end users is highly required for such implementations to be succeeded. During the



implementation stage, it is practically difficult to address various user responses with resistance. Therefore, it is highly required to analyze the reasons for such user responses and to learn effective strategies to manage different states of changes.

This study will investigate the reasons for user resistance, responses of user resistance and propose appropriate strategies to manage these changes.

### **1.2.1 Research Question**

Based on the problem statement, main question to be asked is:

- What are the best change management strategies which can be applied for managing different types of user resistance for implementing ERP?

To assist the main research question, following sub questions will also be answered;

- Why do different types of users resist change in ERP?
- How do different change management strategies apply for managing different types of user resistance with ERP?

### **1.2.2 Research Objectives**

The main research objective is to identify the best change management strategies to apply for managing different types of user resistance with ERP.

Further following sub objectives will also be achieved;

- To identify the reasons of users to resist change in ERP systems.
- To identify different change management strategies to apply for managing different types of user resistance with enterprise systems.

### **1.2.3 Research Significance**

This study will identify change management strategies to apply for managing different types of user resistance with ERP and it will evaluate those change management strategies with the reasons in order to identify the best change management strategies for the relevant resistance reasons.

The significant difference of this research is, it will recommend and propose an effective guideline and model towards managing end user resistance for ERP implementation. This research will contribute to improve the efficiency and productivity in organizations where the process is running through an ERP system.

#### **1.2.4 Limitations of the study**

- Company normal process cannot be disturbed due to the research.
- Some methods and information are protected from researchers due to confidentiality.
- Company process, methods cannot be published with research.
- Language barriers ( i.e. some end users are not fluent in English, hence some interviews and questionnaire are carried in Sinhala)
- Some users are reluctant to share the true information regarding the ERP implementation.

#### **1.2.5 Outline**

This dissertation will be structured as follows:

Chapter one provides an introduction and motivation to the study, problem statement, research question and the research objectives. It also defines the research scope, limitations of the research, and significance of the study.

Chapter two carries out the literature review that consists of overview of ERP systems, various implementation approaches, user resistance theories, resistance behaviors and relevant change management strategies that would assist to manage the user resistance in ERP implementation.

Chapter three holds the research methodology, and exhibits the different methods to discover the solutions for the research questions. Further, an overview is given on how this study will analyze the gathered data and how the results were obtained via quantitative and qualitative approaches.

Chapter four interprets the findings of the research, using the results of the interviews and questionnaire. It also explains user resistance reasons and the change management strategies to influence the success of the system being implemented as answers for the research questions.

Chapter five recommends change management strategies for chosen end user resistance reasons as the main findings. Further those findings are interpreted by relating to the objectives of the research. Additionally, it provides suggestions for the professional practice for the organizations processing with ERP systems.

## **2. LITERATURE REVIEW**

### **2.1 Introduction**

In this chapter, the basic overview on ERP systems will be covered, as well as the benefits of using an ERP system in an organization will be discussed. It is also necessary to examine the ERP implementation cycle to analyze the changes and the corresponding phases where the change will incur. Further these implementation phases will be discussed as a comparison for public and private sector organizations. As the next section this will discuss the failure rates of SAP implementation.

This chapter will also review the user resistance, their theories and models that have been developed. Further, it will seek to explain the fundamental reasons for user resistance and change management strategies for user resistance.

### **2.2 Insights from ERP based research**

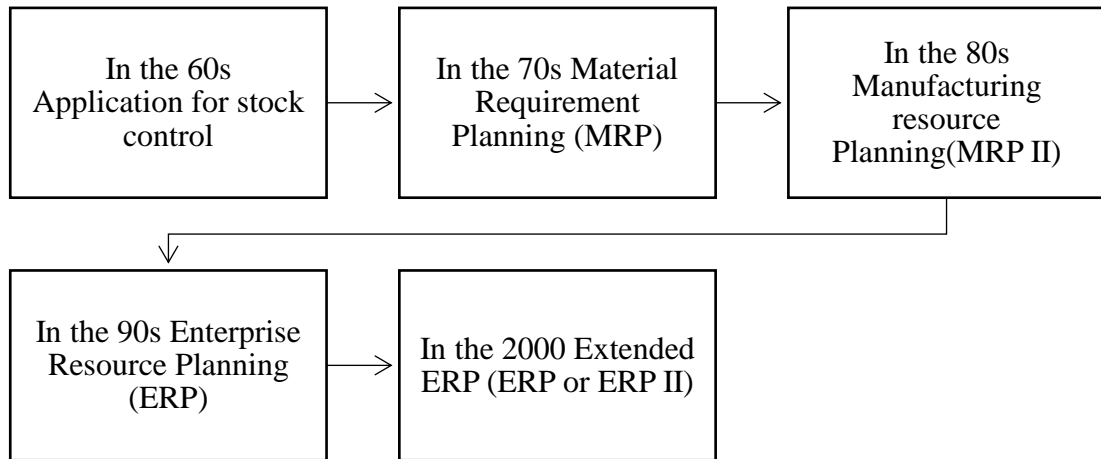
#### **2.2.1 Overview of ERP systems**

ERP represents the systems which are developed for processing transactions, integration at all processes from planning to development phase of production and maintaining relationships with suppliers, customers and other business partners. These systems are mainly based on client-server architecture. (Wieder, Booth, Matolcsy & Ossimitz, 2006)

Since the introduction of ERP in 90s', it became the most useful and effective information system in both multinational companies and corporations. Then ERP has opened up for small and medium sized enterprises. The characteristic of an ERP is to facilitate the integration and update information within the company's business processes. ERP is fully proficient on managing complex processes, from placing orders for demand, production and up to the management decision making. To assist this role, the system consisted with a single database and a single unified interface, which integrates the information throughout different performance areas; planning, production, sales, marketing, distribution, accounting, financial, human resources, project management, inventory, service and maintenance, logistics and e-business. (Wieder et al., 2006)

### 2.2.2 The evolution of ERP

According to the research conducted on ERP systems and related software evolution of ERP is depicted in following figure 2.1;



*Figure 2.1: Evolution of ERP (Beheshti et al., 2006).*

In the ERP industry large investment money is circulating hence ERP market is widely developed and complex. Therefore, choosing ERP supplier for an organization is a very challenging decision for a client. In the ERP industry it is observed that 60% from the market remains to a small number of international manufacturers that are: SAP, Oracle – Oracle Apps., Sage Group (Sage Pro ERP 7.4), PeopleSoft, Microsoft Dynamics NAV Global Technologies (BaanERP), JD, Edwards and in Romania: SIVAPPS (Siveco Applications), Charisma (TotalSoft) ClarvisionERP. After the top 60% next a total of approximately 50 medium sized companies, who develop around one hundred ERP products(Beheshti et al., 2006).The developed products are for several functional areas; SAP in logistics, Oracle in financial, Peoplesoft to human resource and BaanERP in production.

Following factors should be considered when selecting a suitable ERP supplier (Wieder et al., 2006);

- The long-term vision.
- The commitment to service and support leading with implementation.
- The functional characteristics.
- The degree of specialization.
- The experience and financial strength.

### **2.2.3 Advantages and Disadvantages**

#### *Advantages*

The main advantage of an ERP system is the system will enhance the competitive advantage of the supply chain of the organization. Hence this will justify the financial investment involved with ERP implementation in the long run (Helo et al., 2008). ERP will merge all the processes in a firm together and enhance the value creation of a firm.

Further adopting an ERP system will use the maximum capacity of a firm to schedule the production and sales efficiently while keeping the inventory in a low level and managing within the delivery dates (Beheshti et al., 2006).

Most of the ERP systems use a single database and common infrastructure to update data (Helo et al., 2008), hence adopting an ERP system will offer better understanding to enable managers to make better decisions when managing the supply chain. This also assists to ensure the accuracy of the information while eliminating the redundancies (Wieder et al., 2006). Moreover ERP will force a firm to apply best business practices gained by the business expertise. Using the best business practices and accurate information will make the firm to provide a correct indication about the state of the firm easily.

ERP will help to provide real time information and communicate them to the relevant parties without any delay to take necessary actions (Wieder et al., 2006). This will increase the efficiency of operational processes in a firm. Further this will help the organization to reduce the inventory level by adding more visibility to the supply chain to improve delivery and production (Beheshti et al., 2006). Hence this will help to do the production planning and forecasting while standardizing the manufacturing process. Further this will allow the company to automate some processes in the production and delivery. This increased standardization avoids unnecessary resources and reduce the production cost.

#### *Disadvantages*

ERP implementation requires significant amount of financial investment which cannot afford by most of the firms. Further the use of many internal resources when implementing an ERP system has resulted in rejecting the ERP systems by most of the firms (Beheshti et al., 2006). Moreover, this cost includes many hidden costs like training, maintenance, testing, data migration from old systems, consulting, etc. which are impossible to forecast earlier.

Most of the companies reject ERP systems due to the long implementation period. On average full implementation of an ERP will take two (2) to five (5) years till the deployment and there will be future implementation involved with the ERP. But with the dynamic environment which is initiated from the changes in economy and technology, stated implementation period is not practical (Wieder et al., 2006).

Further ERP implementation will need more expertise knowledge in business and some companies may not have such human resources within the company, hence they have to incur more cost on hiring experts from outside.

#### **2.2.4 Approach to ERP implementation**

ERP implementation has been chosen by many firms and it is well established in the private sector. It is becoming popular in public sector in the current context. Though there are many ERP implementation life cycles adopted by the firms, there is an agreed common phases in ERP development life cycle (O'Leary, 2000). Most of the implementation experiences have agreed to the "threads" concept to be included in the implementation approach which will identify the implementation challenges and contributes to the success of ERP. Mohan (2003) stated that the challenges of ERP implementation contains; insufficient sponsorship, resistance to change, unrealistic expectations, inadequate change management strategies, poor project management, etc. Hence to have a successful ERP implementation, a firm should manage the change, develop training sessions, obtain top management support and coordination, implement project management plans, and ensure clear classification of business processes and requirements.

To address the above mentioned challenges and success factors the implementation approach should consists with "threads" combined to the life cycle phases. Theses "threads" include;

**Project management** - Project management is a critical factor of ERP implementation. This thread monitors the entire project while managing the risks, managing the communication gaps, coordinating, budgeting, quality testing, and managing resources.

**People or change management** - Project itself carries change and the main factor for the success of an ERP is the people. Therefore managing people and change should be considered to have a successful ERP implementation. This thread will focus on not only the leadership but also to develop organizational design and develop change management strategies and procedures (Chang et al., 2001).

**Security and controls** - This thread focuses on the integrity of the process by implementing the security infrastructure which includes security policies for business applications and audit controls throughout the project life cycle.

**Information technology** - This includes the analysis, design, development, implementation and testing the technical infrastructure.

**Training and performance support (operations)** - This thread focuses on the assessment of the external and internal needs and providing support. This consists of performing gap analysis, mapping project with the business strategy, overall testing of the project and implementation.

Process design and package implementation - This thread focuses on the business aspect of the project. This will clarify the ERP system from a business perspective in order to map with the business strategies. This will contribute for a higher ROI.

Based on the experience of private sector ERP implementation, some of the government firms partnered with the implementation parties (Watson et al., 2003). Thereby, public sector firms have adopted the private sector implementation approach and customized it to their environment.

### **2.2.5 Factors for successful ERP system implementation**

The successful ERP implementation can be measured from the ROI (Al-Sehali, 2000). ROI can identify how quickly a project can recover the cost and earn benefits, and it is a ratio between the income from the assets or projects and the cost of the assets or projects. This means that if the implementation period is short, benefits can be earned more sooner. Further, ROI assists to measure the efficiency and the effectiveness of the management. Further, Al-Sehali stated that one of the major critical factors for successful ERP implementation was top management involvement and support, hence if the support is not given for the project; it will get delayed and will not be able to recover the benefits as expected.

Moreover, other critical success factors mentioned by Al-Sehali are managing change, clearly understand the objectives of having an ERP in the firm, providing training, and providing job security. These can also be ensured by the review of Bingi, Sharma, and Godla (1999). There are ten (10) critical success factors identified by them which can affect the successful ERP implementation. These can be listed as;

- Top management commitment

The successful ERP implementation is completely resulted by the strong commitment of the top management (Bingi et al., 1999). This will lead through the organization and results in an overall organizational commitment. Hence this will ensure a successful implementation. Thus, top management involvement in every phase of the ERP implementation is a critical success factor.

- Business process reengineering

According to the industry best practices, organizations had to map their business processes in order to ensure a successful ERP implementation. Organizations should have a clear understanding on how their business processes can be mapped with the ERP (Bingi et al., 1999).

- Process integration

ERP systems are developed as one system where whole organization is connected. Therefore, after ERP implementation all the departments are forced to work together (Bingi et al., 1999). Hence organizations should know how the departments are integrated and effect the entire organization.

- Experienced ERP consultants

Another major critical success factor is involving trained and experienced ERP consultants. The knowledge regarding ERP and the business best practices cannot be easily learned and the skilled professionals cannot be easily found, hiring ERP consultants is always a successful solution. In addition, finding consultants with industry specific knowledge, such as public sector experience is even more difficult (Bingi et al., 1999).

- Implementation time

This is very crucial when using measurements such as ROI. Keeping the implementation time at a minimum level is resulted in a successful ERP implementation. Implementation time can be affected by the number of modules going to implement, the scope, the level of customizations required, the level of integration required, etc. (Bingi et al., 1999).

- Implementation costs

Implementation cost should have a minimum value to obtain a higher ROI (Bingi et al., 1999). When implementing an ERP, addition to the implementation cost, there are other costs which include consultation fee, cost of training, hardware cost, maintenance cost, etc. Further, most of the companies increase the salaries of the members in the implementation team and the users in order to avoid employee turnover.

- ERP vendor

Another critical success factor is selecting a suitable ERP vendor. Most of the IT companies are implementing ERP systems of their own. Hence organizations should consider the financial stability, vendor-customer relationships, and their strategic alliances. Moreover, organization should also have realistic expectations such as time, cost, requirements, etc.

- Having qualified employees

Selecting qualified employees for the implementation will also contribute for the success of the ERP system. Further there should be a flexible project manager to handle the conflicts among the team members. Allocating the right employees for the project team will also result in good gap analysis of their functionalities, and good awareness on the company (Bingi et al., 1999). Therefore a company should dedicate their best employees for the implementation team throughout the implementation period.

- Providing training

In order to implement the ERP successfully, trainings should be provided for the relevant users, as the ERP systems are difficult to learn and extremely complex. Organizations should allocate significant time period for the end users to pass the knowledge. Otherwise, the end users will get frustrated over the system and make errors due to lack of knowledge on the processes.



- Boosting employee morale

Employee morale is highly affected when implementing an ERP if change management is ineffective. Employees will frustrate due to their lack of knowledge, lack of computer literacy, etc. when working with the new system. Also, in the initial stage, the employees will need to work extra hours to be in-line with the system. Further the management will be under pressure to implement the ERP successfully. All of these will affect the morale of the management and employees in a negative way, hence this will lead the ERP system to be failed. Therefore it is more important to boost the employee morale by providing required training sessions, providing awards and recognition, arranging fun activities related to the project implementation, etc.

In addition to the above factors Al-Sehali (2000) introduced the factors such as; speed of the implementation, difficulty level of the ERP system, too many requirements and features, unrealistic expectations, lack of planning, centralized decision making, lack of implementation experience, lack of strategy which will cause on the failure of the implementation of the ERP systems. Therefore, if too many of the above factors are present in an organization, there will be more probability in the failure of the ERP system. These factors will heavily change when comparing public sector and the private sector ERP implementation.

### **2.3 Public sector vs. Private sector in terms of ERP implementation**

Though public sector firms have adopted the private sector implementation approach, literature has indicated that public sector has significant differences which affect their implementation approach compared to private sector (Wagner et al., 2004).

The main difference is the culture of the organization (Watson et al., 2003). Most of the public sector organizations are more complex in structure which comprises of many departments or functions with specific rules, procedures, policies and managers. This difference will lead to the challenges like acquiring top management commitment and coordination. Moreover, the political background of the public sector organizations also affects the objectives and strategies of the project and creates challenges in ERP implementation (Wagner et al., 2004).

This complex nature of the government organizations also affects in integrating several departments or functions and identifying a champion for the function implementation. Providing training sessions and educating the users on the system are also the challenges in public sector organizations, due to complex procedures and policies. Forming a project team and a steering committee is also different when compared to the private sector, since the teams should be consisted with members from each department. Hence there will be much larger teams, while private sector firms have small project teams. Moreover, when creating teams, allocating effective power distribution among members will also be challenges.

Financial funding is another major difference of the public sector ERP implementation compared to private sector implementations, since those firms have very complex budgeting procedures and allocation process.

Another key difference is that the public sector does not have the same feeling on the customer that they have to attract the customers in order to meet with the competition as private sector. Since, ERP is compiled more with the customer care public sector has to change massively when adopting an ERP system.

However, the best business practices are moreover the same, in the public and the private sector. Therefore, to meet the business practices, public sector needs to add extensions for their processes (Blick, 2000).

## 2.4 Failure or success factors of SAP ERP implementation

Based on the survey of Panaroma Consulting Group for 2017 (Irimia et al., 2016) for SAP vendors, 17% of vendors stated that they need SAP ERP to improve business performance while 14% need it to make employee jobs easier (figure 2.2).

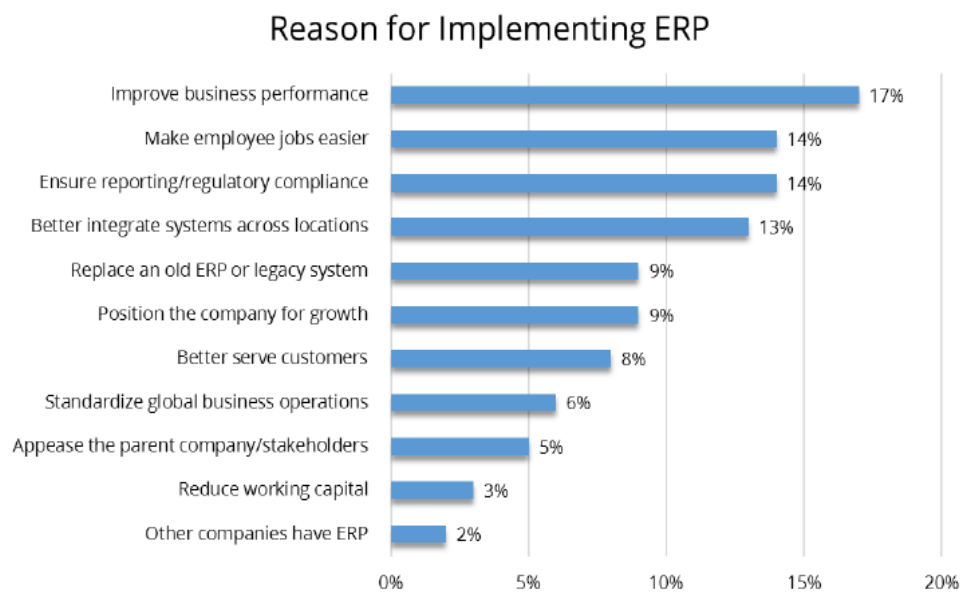


Figure 2.2: Reasons for implementing ERP (Irimia et al., 2016)

Further, when it comes to customization, SAP standard is to keep the customization level around 10% - 20%. Most organizations stayed within this range according to the Panorama survey as shown in figure 2.3.

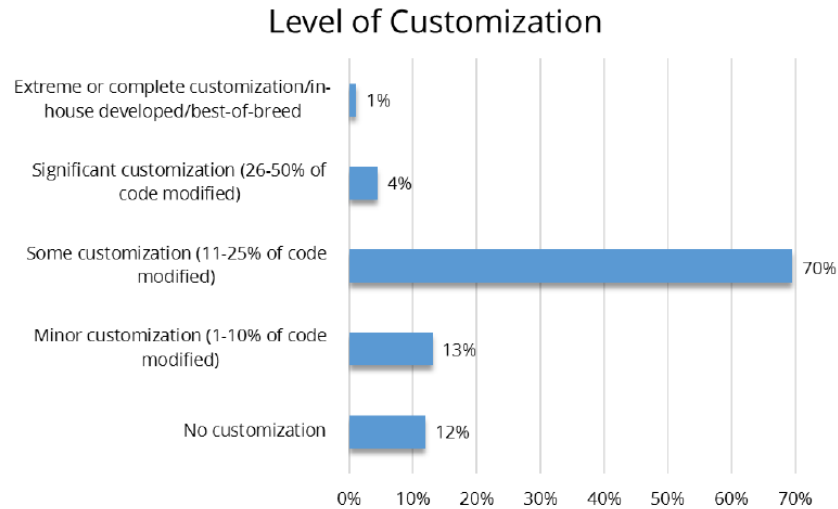


Figure 2.3: Level of customization (Irimia et al., 2016)

With the above mentioned customization rates as shown in figure 2.3, there has been a 13% increase in success rates since last year, there also has been a 19% increase in respondents characterizing their project as a failure.

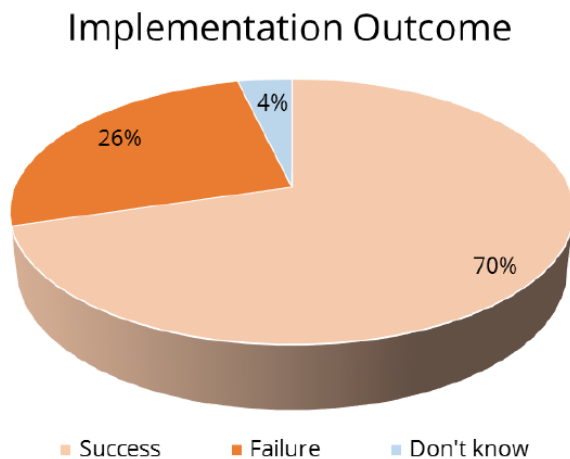


Figure 2.4: Implementation Outcome (Irimia et al., 2016)

According to figure 2.4 though the implementation outcome shows 70% success rate in 2017, when considering customer satisfaction, in terms of their overall vendor experience, only 26% of respondents reported vendor satisfaction (figure 2.5). They have stated that they have excess functionality available with system and it was not used by the users.

## Overall Experience With ERP Vendors

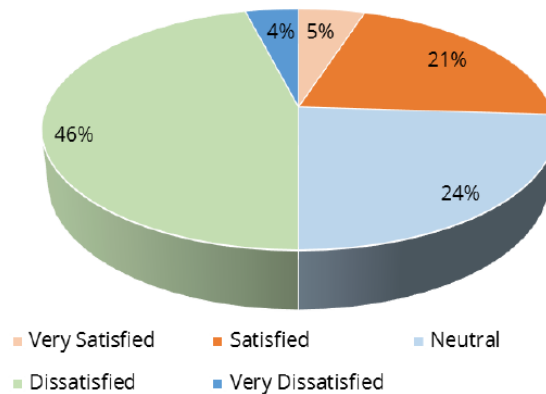


Figure 2.5: Overall experience with ERP vendors (Irimia et al., 2016)

According to Panaroma Consulting Group, their main recommendation is with end users. They have stated that the vendors can save money and time in the long term by investing more particularly towards end user buy in, communication and training.

### 2.5 User resistance

As mentioned earlier, change management is a critical success factor in ERP implementation since the users and the processes are highly affected. Due to the change in any organization, resistance may occur, sometimes for the betterment of the company. Resistance can reduce the effectiveness of the system or the technology. In IS literature, user resistance has mentioned as an adverse reaction (Barker et al., 2003) or the opposition of the users for the change related to new system implementation (Helo et al., 2008).

According to the literature in previous research, resistance can be described in three different perspectives (Hong et al., 2002); People oriented, System oriented Interaction theories.

- People oriented perspective

This is mainly oriented to internal users as individuals or groups (Hong et al. 2002). Studies describe this as resistance created due to the factors or characteristics of users, (e.g. age, gender) background of the user, their values and beliefs resulted towards the technology or the system (Hong et al., 2002).

- System oriented theory

This focuses on the factors such as design, architecture of the system or the technology used i.e. user interface and other features such as reliability, centralization and, performance. Therefore, system oriented theory defines that user resistance can occur due to the design and architecture of the system.

- Interaction theory

This theory implies the interaction between people and system. This contains the political and social factors of an individual which affects the acceptance of the change. As an example, the system can be resisted by a particular user due to the loss of power, fear to the change, etc. This theory implies that the system or user alone cannot be the reasons for the user resistance but, the user perceived values and beliefs over the system or change.

Resistance is consisted with five (5) basic elements as proposed by Lapointe and Rivard (Rivard et al., 2012).

- Manifestations of resistance,
- Subjects of resistance,
- Object of resistance,
- Perceived threats, and
- Initial conditions

### ***Manifestations of resistance***

This is the main element of resistance which consists of the behaviors of the users as a result of resistance for the implementation of the system. Manifestations of resistance include denial, inaction, complains, etc. these behaviors can be weak, destructive and strong, strong and not destructive.

### ***Subjects of resistance***

Subjects of resistance are the actor or actors who are providing resistance behaviors. This may include individuals, user groups or the entire organization.

### ***The object of resistance***

The object of resistance is the target of the resistance behaviors. This can be the system and its functionalities or negative or positive effect from the system to the users such as loss of status, power or may be the implementation team or external consultants of the system.

**Perceived threats**

This indicates the negative feelings or assessments of the users regarding the system.

**Initial conditions**

This implies the main characteristics of the system environment which engage with the object of the resistance and affect the perceived threats of the situation.

The five (5) elements mentioned above cannot be secluded and all together builds the resistance for system implementation.

Laumer and Eckhardt (2012) have developed a model to understand the user resistance further. It can be illustrated by the following figure 2.6;

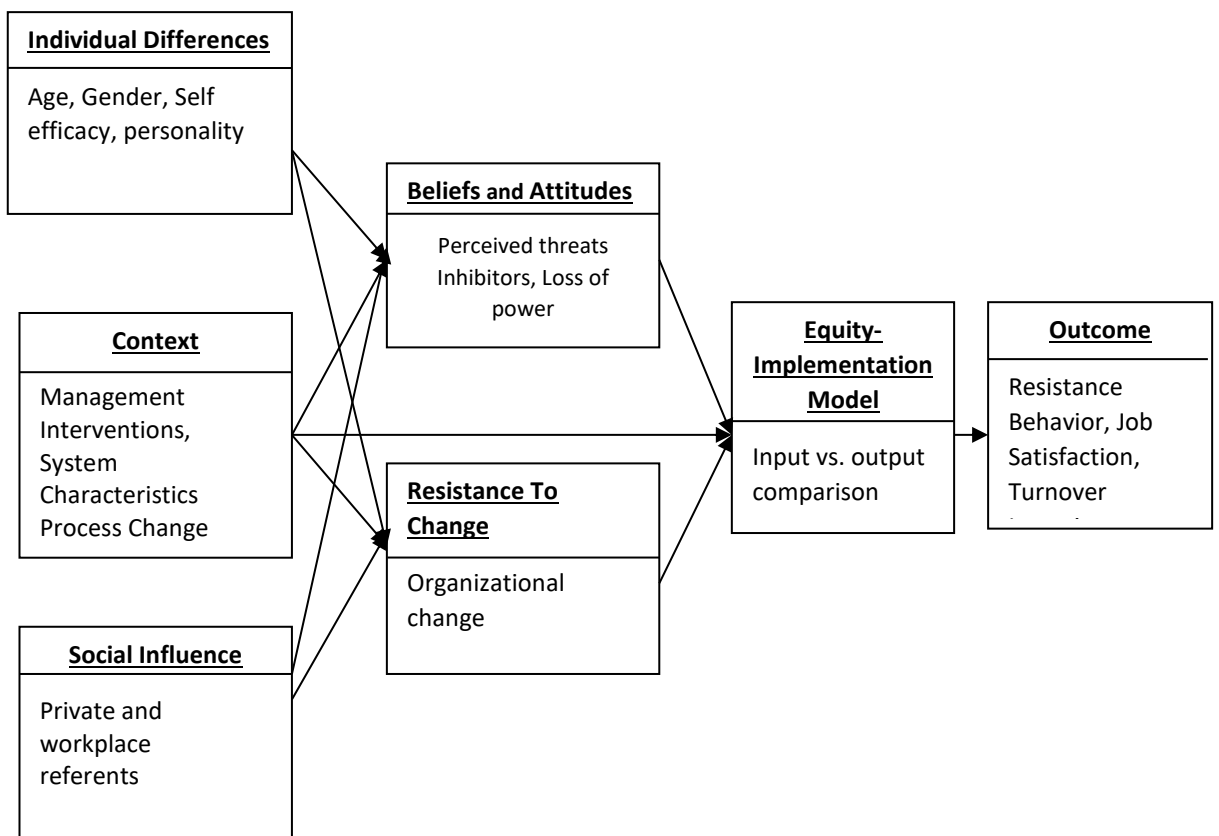


Figure 2.6: User resistance Model (Laumer et al., 2012).

### 2.5.1 Reasons for user resistance

Reason for user resistance is a main element of user resistance model. Therefore, many researches were conducted to identify user resistance reasons.

Shang S & Su T (2004) have identified user resistance and categorized them such as; parochial self-interest, misunderstanding and lack of trust, different assessment, and low tolerance for change. These categories of user resistance can be illustrated further as per the table 2.1.

Table 2.1: Reasons for user resistance categorization (Shang et al. 2004)

Reasons of Resistance	Contents
<b><i>Parochial self-interest:</i></b> resisting change to prevent losing something of value	Job insecurity Losing power and status Reduced scope for advancement Reduction of autonomy Lack of control Loss of autonomy and control or specific skills
<b><i>Misunderstanding and lack of trust:</i></b> Misconceptions about the implications and insufficient information of the benefits and gains	Misunderstanding the change (implementation) Insufficient knowledge in using new systems
<b><i>Different assessment:</i></b> Employees see more costs than benefits while who implement the change see the reverse as true	Disagreement for the benefits come with the new change Systems cannot provide real experience for decision making
<b><i>Low tolerance for change:</i></b> Fear of not sufficiently developing the skills and behavior required	Fear of lacking certain aspects of the current situation Conflict and ambiguity of the roles within the organization Altering relationships Bringing higher skill levels to the job
<b><i>Increased efforts:</i></b> Additional efforts or abilities needed for the job	More effort required to perform tasks Increased monitoring Need to spend more time for work

Apart from the above mentioned reasons some of the researchers have found the following reasons for resistance (Dent et al., 1999).

- Workload
- Complexity
- Uncertainty
- Environment
- Lose Control
- Lack of Fit
- Technical Problems
- Changed Job
- Lack Input
- Communication
- Training
- Self-Efficacy

#### ***Power/ Politics and resistance***

Some of the researchers have mentioned power and politics have major contribution towards resistance in ERP implementation. Laumer (2012) mentioned that group of users will tend to use the system if they believe it will support their position of power. Markus's (1983) model shows resistance as a result of an interaction of the system features with the power distribution in the organization. If users recognize that there is a loss of power, they are likely to resist. This model shows that the potential of resistance is correlated to the size of the loss and its apparent importance (Allen et al., 2002).

It is identified that communication also as a political process in public sector institutes. The respondents of the research believed that to control opposition to the ERP project the project team and senior managers had tightly controlled the information circulated on the project. Further they have mentioned that taking the expertise knowledge when implementing ERP system is also based on a political process. This research has identified that power and politics has been a critical success factor for the public sector institutes and it creates a major effect in user resistance.



The above mentioned user resistance reasons can be summarized as follows with the relevant literature sources;

*Table 2.2: Literature sources for user resistance reasons*

Resistance Reason	No of literature sources	Literature Sources
Job insecurity	15	Kim & Kankanhalli (2009), Krovi (1993), Martinko et al., (1996), Laumer et al., (2012), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker & Frolick (2003), Helo, Anussornnitisarn, & Phusavat (2008), Hong & Kim (2002), Smith & McKeen (1992), Janson, Woo & Smith (1993), Klaus et al., (2007), Wingreen & Blanton (2007), Aladwani (2001)
Losing power and status	15	DeSanctis & Courtney (1983), Kim et al., (2009), Jiang, Muhanna & Klein (2000), Krovi (1993), Marakas & Hornik (1996), Martinko et al., (1996), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002), Smith et al., (1992), Janson et al., (1993), Klaus et al., (2007)
Uncertainty	15	Kim et al., (2009), Hirschheim & Newman (1988), Jiang et al., (2000), Krovi (1993), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002), Smith et al., (1992), Janson et al., (1993), Klaus et al., (2007), Aladwani (2001)
Lack of communication with top management and end users	13	Rivard et al.,(2012), Martinko et al., (1996), Bingi et al., (1999), Al-Sehali (2000), Blick, (2000), Laumer et al., (2012), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002)
Lack of training and education	13	Rivard et al., (2012), Martinko et al., (1996), Bingi et al., (1999), Al-Sehali (2000), Blick (2000), Laumer et al., (2012), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002)
Lack of management support	13	Kim et al., (2009), Hirschheim et al., (1988), Krovi (1993), Martinko et al., (1996), Bingi et al., (1999), Blick, (2000), Laumer et al., (2012), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003)
Change in job content	12	DeSanctis et al., (1983), Kim et al., (2009), Xue, Liang, Boulton & Snyder (2005), Jiang et al., (2000), Martinko et al., (1996), Blick, (2000), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et

		al., (2003), Helo et al., (2008)
Increased efforts	12	Xue et al., (2005), Laumer et al., (2012), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002), Smith et al., (1992), Janson et al., (1993), Klaus et al., (2007), Aladwani (2001), Coetsee (1999)
Lack of involvement in the development process	12	Rivard et al., (2012), Martinko et al., (1996), Al-Sehali (2000), Blick, (2000), Laumer et al., (2012), Shang et al., (2004), Dent et al., (1999), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002)
Different assessment and user expectations	10	Kim et al., (2009), Krovi (1993), Martinko et al., (1996), Al-Sehali (2000), Laumer et al., (2012), Shang et al., (2004), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008)
Technology issues	10	Kim et al., (2009), Martinko et al., (1996), Al-Sehali (2000), Blick, (2000), Laumer et al., (2012), Shang et al., (2004), Jiang et al., (2000), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002)
Lack of resources	8	Hirschheim et al., (1988) Blick, (2000), Shang et al., (2004), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), Helo et al., (2008), Hong et al., (2002)
Changes in working environment	8	Rivard et al., (2012), Al-Sehali (2000), Blick (2000), Laumer et al., (2012), Shang et al., (2004), Jiang et al., (2000), Helo et al., (2008), Hong et al., (2002)
Altering relationships	5	Kim et al., (2009), Dent et al., (1999), Barker et al., (2003), Hong et al., (2002), Smith et al., (1992)
Formalized business processes	5	Xue et al., (2005), Bingi et al., (1999), Blick (2000), Jiang et al., (2000), Helo et al., (2008)

Based on the above table 2.2, job insecurity has the large number of literature sources. But when considering the public sector organizations, job insecurity is minimum (Chang et al. 2001). Therefore the user resistance due to job insecurity is considerably low. Altering relationships and uncertainty are psychological factors which are interconnected to user education, communication and user expectations.

Based on the table 2.2, ten (10) factors were selected for the study;

- i. Loss of status
- ii. Lack of communication between top-management and end users
- iii. Lack of user Involvement in the Development Process
- iv. Change in job content
- v. Lack of resources

- vi. Lack of training and education
- vii. Loss of power
- viii. Usability issues and resistance to technology
- ix. User Expectations
- x. Changes in working environment

**2.5.2 Resistant Behaviors / Manifestations of resistance**

Resistance behavior is the core element of resistance (Lapointe et al., 2005). Behaviors are varied from being passively uncooperative to destructive physical behaviors. Costee. L (1999) mentioned that resistance behaviors can be seen in four (4) ways; apathy, passive resistance, active resistance, and aggressive resistance.

Apathy behaviors contain inaction, distance, and lack of interest. Passive resistance includes mild behaviors such as delay tactics, excuses, persistence of former behavior, and withdrawal. Further active resistance are the behaviors which are strong but not destructive to the implementation of the system such as voicing opposite points of view, asking others to intervene or forming coalitions. Moreover, infighting, making threats, strikes, boycotts, or sabotage seek can be considered as aggressive resistance behaviors which are disruptive and may even be destructive. These can be illustrated further by using the table 2.3;

*Table 2.3: Resistance Behaviors (Costee, L 1999)*

Apathy	Passive resistance	Active resistance	Aggressive resistance
Inaction	Delay / Procrastinated	Voicing opposite points of view	Infighting
Distance	Excuses	Asking others to intervene	Making threats
Lack of interest	Persistence of former behavior	Forming coalitions	Strikes
Challenged	Withdrawal	Don't Follow Processes	Boycotts
Impatient	Complain	Less productivity	Sabotage
	Old System	Don't want to learn system	Hack
	Avoid	Refusal	Quit
			Turnover Intention

## 2.6 User Resistance Management Strategies

Resistance in ERP implementation can be eliminated by using variety of strategies according to the several researches. These strategies are formed based the reasons for user resistance and mainly categorized into two (2) main forms (Jiang et al., 2000);

- Participative – Incorporating user participation
- Directive – Strategies which are imposed by management

### 2.6.1 Participative strategies:

Table 2.4 shows the participative strategies identified in the literature. These strategies are made by involving users.

*Table 2.4: Participative strategies*

Change management strategy	No of references	References
Involve employees in development of new systems to encourage a feeling of ownership	10	Jiang et al., (2000), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003), , Klaus, T et al., (2007), Lapointe et al., (2005), Rivard et al., (2012)
Provide employees with information regarding system changes to preserve ownership, communicating ERP benefits	10	Jiang et al., (2000), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003), Klaus et al., (2007), Lapointe et al., (2005), Rivard et al., (2012)
Train employees to be effective users of the new system	10	Jiang et al., (2000), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003), , Klaus et al., (2007), Lapointe et al., (2005), Rivard et al., (2012)
Provide user support	10	Klaus et al., 2007, Jiang et al., (2000), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003), Lapointe et al., (2005), Rivard et al., (2012)
Conduct orientation sessions to prepare for change	8	Jiang et al., (2000), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Wieder et al., (2006), Klaus et al., (2007), Lapointe et al., (2005), Rivard et al., (2012)

Document standards so new procedures are easy to learn and reference	8	Dent et al., (1999), Jiang et al., (2000), Shang et al., (2004) , Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003), Klaus et al., (2007)
Initiate morale-boosting activities, e.g., company parties and newsletters, to promote community	6	Jiang et al., (2000), Jiang et al., (2000), Wieder et al., (2006), Barker et al., (2003), , Klaus et al., (2007), Lapointe et al., (2005), Rivard et al., (2012)

### 2.6.2 Directive strategies:

Table 2.5 shows the directive strategies identified in the literature. These strategies are imposed by the management which directs the users into a goal.

*Table 2.5: Directive strategies*

Change Management strategy	No of references	References
Top Management Support	10	Rivard, S., et al. 2012, Chang et al. (2001), Klaus et al., (2007), Aladwani (2001), Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Watson et al. (2003), Jiang et al., (2000)
Provide sufficient resources	8	Watson et al., (2003), Chang et al., (2001), Rivard et al., (2012), Aladwani (2001), Watson et al., (2003), Chang et al., (2001), Dent et al., (1999), Hong et al., (2002)
Have expertise knowledge when implementing	8	Klaus et al., (2007), Rivard et al., (2012), Aladwani (2001), Dent et al., (1999), Chang et al., (2001), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006)
Upgrade work environment following change, e.g., more space and design for comfort, to improve atmosphere	7	Rivard et al., (2012), Aladwani (2001), Shang et al., (2004) , Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006)
Pace conversion to allow readjustment period to new system	7	Rivard et al., (2012), Aladwani (2001), Dent et al., (1999), Chang et al., (2001), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006)
Clearly establish in advance the demarcations of authority	6	Jiang et al., (2000), Dent et al., (1999), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003)

Alter job titles to reflect increased responsibility to clarify job roles	6	Dent et al., (1999), Chang et al., (2001), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003)
Provide incentives	6	Rivard et al., (2012), Aladwani 2001, Watson et al., (2003), Chang et al., (2001), Dent et al., (1999), Hong et al., (2002)
Provide customizations to the system which will assist user friendliness of the system	6	Rivard et al., (2012), Dent et al., (1999), Chang et al., (2001), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006)
Reward ideas that will improve throughput to encourage us	6	Aladwani (2001), Dent et al., (1999), Chang et al., (2001), Helo et al., (2008), Hong et al., (2002), Wieder et al., (2006)
Call a hiring freeze until all displaced personnel are reassigned in order to avoid layoffs	5	Aladwani 2001, Watson et al., (2003), Chang et al., (2001), Dent et al., (1999), Chang et al., (2001)
Arrange job transfers to avoid users with no interest in new procedures	4	Dent et al., (1999), Hong et al., (2002), Wieder et al., (2006), Barker et al., (2003)
Political Support	3	Dent et al., 1999, Watson et al., (2003), Chang et al., (2001)

### 2.6.3 Strategy Implementation framework

The earlier mentioned strategies can be implemented by using process oriented, integrated and conceptual framework by adhering into three (3) phases (Aladwani, 2001).

The three (3) phases are as follows;

- Knowledge formulation phase
- Strategy implementation phase and
- Status evaluation phase

#### *Knowledge formulation phase*

Aladwani (2001) stated that the first step of the implementation process is to identify and evaluate the attitudes of the individual users and influential groups.

This analysis will find the answers to the following questions;

- Who are the resisting individuals and/or groups?
- What are their needs?

- What beliefs and values do they have?
- What are their interests?

This analysis will assist to determine the reasons for user resistance when implementing an ERP system.

### ***Strategy implementation phase***

As per Aladwani (2001) the next step of the process is setting up strategies to match with the identified reasons which are identified in the initial phase of the process. As the first step of this phase management can communicate with the users effectively to influence the cognitive component of the attitudes of the users. As the next step management can try to influence the affective component of the attitudes of the users by minimizing the adoption cost of the users.

### ***Status evaluation phase***

Status evaluation phase is the process of monitoring and evaluating the change management strategies which are designed for the ERP implementation. This is the last step of the framework. Apart from the performance measurement system which can ensure the desired outcome is achieved, a performance system to monitor the progress of the change management strategies should also be designed and implemented.

## **3. RESEARCH METHODOLOGY**

### **3.1 Introduction**

In this chapter, the methodology and procedures used to conduct this study are described. The collection and analysis of survey and interview data will serve to capture related information as provided by top management, core team (i.e. the supportive team of the ERP implementation appointed in 2008 in CPSTL) and low level end users of SAP system in CPSTL.

This chapter is divided into five sections and under the first section research problem is described. The second section contains the research design where the mixed case study approach is used. The third section describes how this research derives the population and sample which is used for the study. The fourth section is comprised of the research method where the interviews and survey development are described as the research instruments. The fifth section describes the method of data collection.

### **3.2 Research Problem**

ERP is considered as packaged software for many enterprises which imposes changes on users at different levels and different areas. Business involvement with end users is highly needed for such implementations to be succeeded. At the time of the implementation, it is practically difficult to address various user responses with resistance. Therefore, it is highly needed to analyze the reasons for such user responses and to learn effective strategies to manage different states of changes.

This research is mainly focused on the Ceylon petroleum Storage Terminals Limited, Kolonnawa which is a public sector organization in Sri Lanka. They have implemented SAP system in 2008 with the main functional modules, Sales and Distribution (SD), material management (MM), Finance (FI), Human Resources (HR) and Production (PP). Currently CPSTL is using only 3 functional modules, SD, MM and FI. Though the implementation phase is completed, still there are change requests for the current functionalities in SAP for those three modules.

Apart from the above three modules HR and PP modules are still in the configuration phase. It is identified by the IT department that the end user involvement is not sufficient enough for the full configuration of the system and for the change requests. As per the current experience while working at CPSTL as a Software Engineer it is evident that the user resistance has been a negative impact on the implementation delays and failures.

This study will explore the reasons and responses of user resistance and suggest applicable strategies to manage these changes.



### **3.3 Research Design**

The objectives and the questions of the research should be addressed by the research design. This study was mainly conducted for CPSTL., Kolonnawa. Since this is a case study based research, to achieve the mentioned objectives effectively, mixed approach was adopted. Due to the involvement of employees, the confidentiality of information was secured.

This qualitative case study is covered by three (3) major phases. As the first phase, it is involved with conducting an extensive literature review to identify the resistance theories, determinants of user resistance and change management strategies to manage the user resistance. After the extensive review, the determinants and the change management strategies were analyzed to make the research in usable and a structured way.

After structuring the identified theories, research instruments and measures were developed to capture the concepts of the theories. As the final phase, different procedures were administrated to collect the empirical data to analyze the research model while analyzing them via rigorous analysis methods.

#### **3.3.1 Case Study Approach**

To conduct the research effectively two types of information from the case study is collected as follows;

**Primary Data:** Primary data is the original data which has not been interpreted by anyone. In this case study, primary data is gathered by interviews and questionnaires. Primary sources provide the raw data while the secondary data help to understand and analyze it in a proper way.

**Secondary Data:** These data is interpreted, analyzed and published by others. The data sources are articles, scholarly books and journals.

As the first step, secondary data is collected from literature by referring a group of published articles related to ERP implementation and user resistance. Further, it has analyzed the failure factors of ERP implementation and how the end user resistance becomes a major risk factor for ERP implementation. As the next step, the dimensions of user resistance such as reasons for user resistance, end user behaviors due to resistance, change management strategies for user resistance and how to apply the identified strategies in a project of ERP implementation are identified. Moreover, it has identified and analyzed how the ERP implementation works, and failures of SAP implementation in organizations.

### **3.3.2 Mixed Approach**

The aim of this approach is to gain views and knowledge from participants and to gather the answers given for the questions starting from “how” and “why”. The best method to use in collecting information via qualitative approach is conducting interviews.

Quantitative approach on the other hand is more statistical and this is conducted using questionnaires. This approach helps to gather the answers for the questions starting from “who”, “what” and “where” questions.

As mentioned in the above, both approaches are used for this study. Questionnaire survey method has been chosen to collect data from low level end users where the number of respondents is high. Both closed ended and open ended questions are used in the interviews to collect information from the core team.

#### ***Single Embedded Research Design***

Yin (2013) mentioned that the case study design can be categorized into four (4) types namely;

- Single case (holistic)
- Single case (embedded)
- Multiple-case (holistic)
- Multiple-case (embedded)

These designs can be further illustrated as shown in figure 3.1;

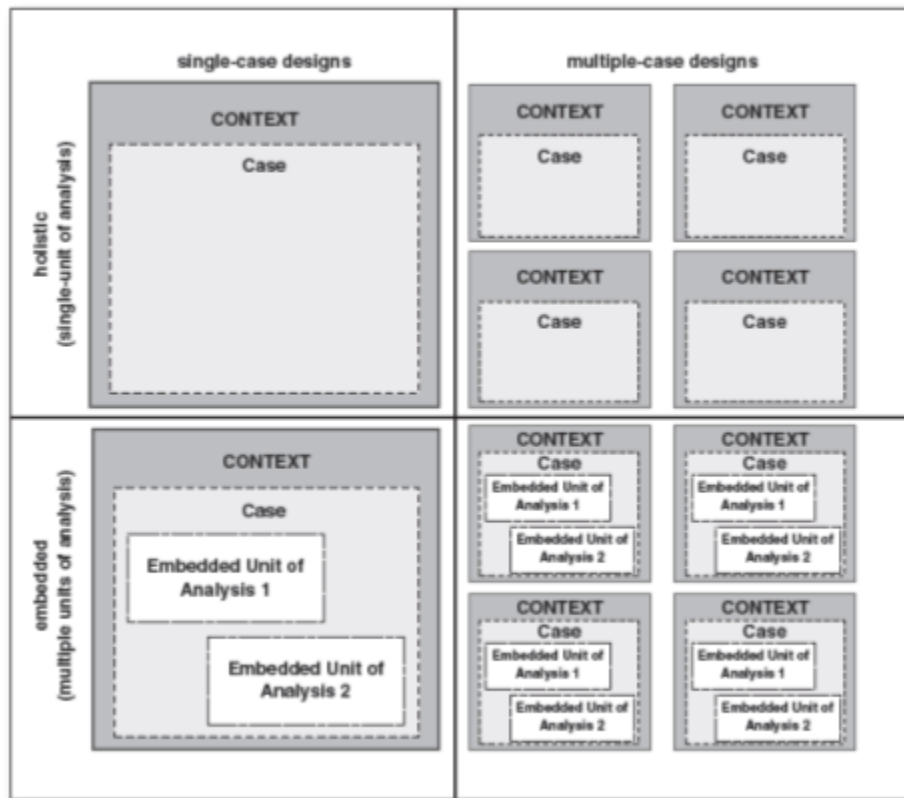


Figure 3.1: Research Design (Yin, 2013)

Even though this research is investigating on CPSTL itself, the interviews and survey data was collected from different departments (i.e. subunits) such as; IT, Sales, Finance, HR and Stores. Therefore this research design would be categorized as single (embedded) research design.

### 3.4 Population and Sample

The population for this study consisted of the individuals who were a part of the ERP system (SAP) in CPSTL. By considering the number of end users of SAP ERP system population has become around one hundred and twenty (120).

Based on the concept of the research study, the main objective is to identify the user resistance reasons, and change management strategies to manage them. Hence, the sample was taken based on the number of end users who interacted with the system during the implementation of the SAP system in 2010. Therefore the sample size has been reduced to fifty (50).

The sample can be interpreted further using the figure 3.2;

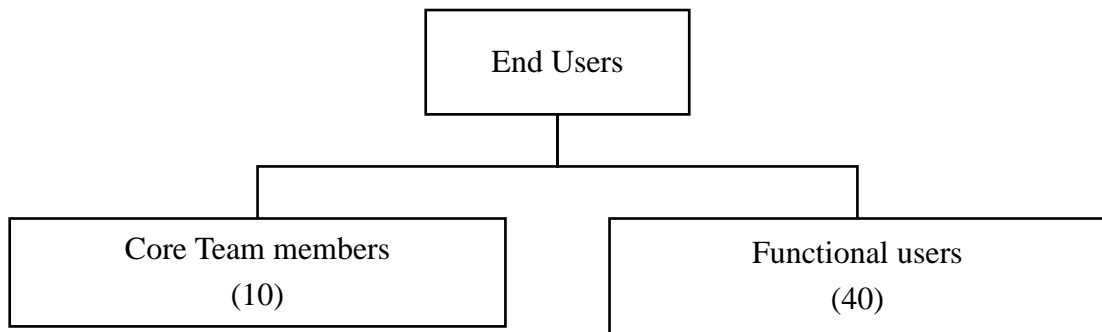


Figure 3.2: Selection of sample

### 3.5 Research Method

The main objective of this research is not limited to the factor of managing end user resistance, thus this research pursue more on why the users in CPSTL resist towards the SAP ERP system, their behaviors and discussing on how to manage those resistance types using relevant change management strategies. To implement this research, it requires a sufficient understanding on reasons for resistance, types of behavior and change management strategies. Hence, this secondary data is collected by conducting interviews and survey for CPSTL.

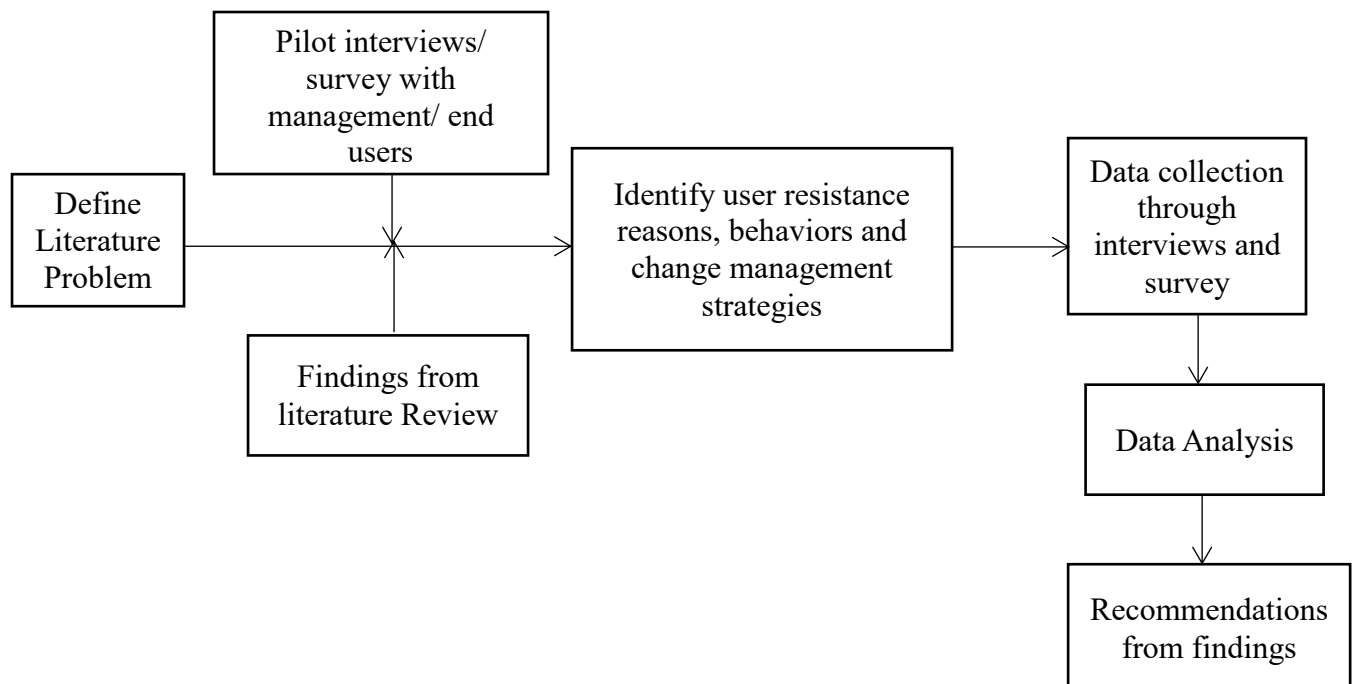


Figure 3.3: Research approach

### **3.5.1 Interviews**

Qualitative research through interviews was used in order to provide different perspectives on the topics investigated in the research. Semi-structured face-to-face interviews were chosen to carry out this qualitative research. In total, ten (10) interviews were prepared to conduct for the core team. But, due to unavailability of the respondents, only eight (8) were interviewed. Given the time constraints of the participants, each interview lasted for twenty (20) minutes.

Interviews were used, since this is the most appropriate method to get an understanding on the relevance of soft issues during the IT system implementation (King, 1997). This method allows for additional or follow-up questions to get more clarity. Classification questions were also asked to gather sensitive information, such as their experience, educational qualifications, age of the respondents, gender, etc. The interviews were conducted at the workstations of the participants, at the CPSTL Kolonnawa. The main reason for conducting on-site interviews is that, it was anticipated that participants would feel more confident and relaxed in their own surroundings. Furthermore, privacy would be ensured if the interviews were conducted in private premises.

### **3.5.2 Questionnaire**

The questionnaire which includes questions that required the respondents to specify whether they agreed, or did not agree, with the statements which maps with the six (6) point Likert scale was used as an add-on to the interviews. Questionnaires enable researchers to include a much broader range of respondents in their research, and thereby find evidence of patterns amongst bigger populations.

A total of forty (40) employees were selected to participate in the survey. The sample was composed of the several departments where the SAP is implemented namely, sales, finance, procurement and stores functions.

The questionnaire for the survey was developed by means of an interactive process of discussions with various specialists in the IT and the SAP core team.

Mainly closed questions were used in the survey, in order to identify any trends or patterns. For these kind of questions; answers have been predefined that could be chosen based on the six (6) point likert scale.

The purpose of the questionnaire was used to get additional information as an add-on to the interviews, in order to evaluate the impact of change management strategies on the success of ERP implementation. Further, it is used to find out to what extent, and how successfully, change-management methods were utilized during system implementation.

A pilot test of the questionnaire was done to ensure that the faults were corrected, and to ensure that the questionnaire would gather the information which intended to gather (Churchill, 1991). The following steps were followed during the pilot test:

One individual from each section, namely: the finance function, the sales function, the stores function was requested to fill in the questionnaire. A short briefing session was held to explain the purpose of the pilot test. The respondents were asked to give their opinions on whether the questionnaire is comprehensive, whether the questions are not clear, and any other comments regarding the questionnaire. Finally changes were made to the questionnaire, as highlighted by the respondents.

Final questionnaire has been prepared based on the feedback from the pilot test. The survey involved thirty (30) predefined questions, by distributing the printed copies among the selected users. All the questions were closed ended, which intend to provide quantitative data and require the participants to choose from a given set of responses which are based on six (6) point likert scale. The collected data have been analyzed using SPSS technique as statistical tools.

The questionnaire includes six (6) questions to get the demographic data, three (3) questions related to the dependent variable, and twenty-one (21) questions related to the seven (7) dependent variables where each variable consists of three (3) questions.

The variables are identified based on the literature. In the literature, ten (10) reasons for the user resistance were identified. Based on the interviews with the top management and work experience those reasons were further analyzed and reduced to seven (7) factors which are the major concerns in CPSTL.

#### **Dependent Variable:**

- i. ***End user resistance*** - Users resist towards the systems due to various reasons. Therefore this variable is the dependent variable which inherits other factors.

#### **Independent Variables:**

- i. ***Lack of education and user training*** - Trainings should be provided for the users in order to avoid user opposition for the system implementation. By providing training sessions and awareness about the system, users get opportunities to learn, and users can be familiar with the system.
- ii. ***Changes in job content*** - The normal routine of the users, changes due to the new system implementation. With the new change there will be process reengineering, process automation, etc. to map with the best business practices. Employees should understand in what way ERP transforms business processes in an organization.
- iii. ***Lack of communication between top-management and end users*** - Organizations need to justify the benefits of processing an ERP system to end-users by communicating the system benefits. Further this justification must be communicated to end-users when the decision to implement the ERP system is made.

- iv. ***Lack of user involvement in the development process*** - Developing a highly unstructured system like ERP, user involvement will become significant for improving user acceptance.
- v. ***Usability issues and resistance to technology*** – User resistance can be occurred due to usability issues in the system. These issues can be identified as navigation problems, lack of user friendliness, lack of reports in desired formats, etc.
- vi. ***Working environment / user support*** – Working environment can also be a major factor for the end user resistance. This includes, working atmosphere, hardware and software requirements, etc. In addition to the working environment, user support should also be provided during the implementation and after the implementation phase.
- vii. ***User expectations*** – User expectations should also be considered when selecting an ERP vendor. This can be analyzed by comparing the current process of the organization with the proposed solution.

### **3.6 Process of Data Collection**

#### **3.6.1 Interview Procedure**

In preparation for the interviews, each of the interviewees received a consent letter requesting their participation in the study. The consent letter included the purpose of the research and an assurance of confidentiality and anonymity. The dates and times of the interviews were arranged with the participants directly. On the scheduled dates, the participants were called and requested to make them available at their workstations.

At the beginning of the interview, the purpose and procedure of the interview were explained while anonymity of their identities and responses were assured. An assurance of confidentiality of responses and a guarantee of anonymity increased the likelihood of reliable results.

The interviewees were further informed that they were not bound to answer all the questions, and could reserve their comments to any question they may have felt uncomfortable in answering. Some of the interviews are conducted in Sinhala due to language barriers. Further the recordings were not allowed by the respondents due to the confidentiality.

### **3.6.2 The procedure of the questionnaire**

Dates and times were set for the distribution of the questionnaire for each department. The participants were notified of the date, the time and the venue for the completion of the questionnaire. The respondents were selected based on the experience they had with the SAP system and mainly the respondents were the key users who used the system during the implementation of the SAP system.

The respondents agreed, by accepting the appointment on their e-mails. A briefing session was held at the beginning of the session; and the respondents were allowed time to ask clarification questions.



## 4. DATA ANALYSIS

### 4.1 Data Preparation for Analysis

To conduct and investigate this research, interview sessions have been conducted as the initial step. After the interview sessions questionnaire has been prepared based on the feedback of the top management, to gain information from SAP users in lower level. Both interview sessions and questionnaire were conducted at CPSTL in Kolonnawa, where interviews were conducted from the workplaces of the interviewees and questionnaires were administered by distributing the printed copies among the SAP users.

### 4.2 Interview Data Analysis

In order to gain the in detail information regarding the SAP implementation, ten (10) interview sessions from each division (IT (4), Finance (2), Stores (2), and Distribution (2)) were planned. Due to the unavailability of the relevant people, only eight (8) interviews (IT (4), Finance (2), Stores (1), and Distribution (1)) were conducted.

The questions of the interview have categorized based on the research sub-objectives; to identify the reasons for user resistance and to recommend change management strategies for each reason for user resistance.

#### *Why do different types of users resist change in ERP?*

The reasons are listed based on the most stated to least. All the respondents were in the core team of the ERP implementation. The reasons are listed as phrases mentioned in the interview sessions.

*Phrase 1 - "Even the core team members were not aware on the project plan initially"(100%)–*

As per the figure 4.1 this has been stated by all the respondents (100%). Three (3) respondents from IT division stated that they were not informed on the decision of ERP implementation prior to the first meeting. Further they mentioned that they did not have a positive perception regarding the decision initially, since they did not have proper information on the decision.

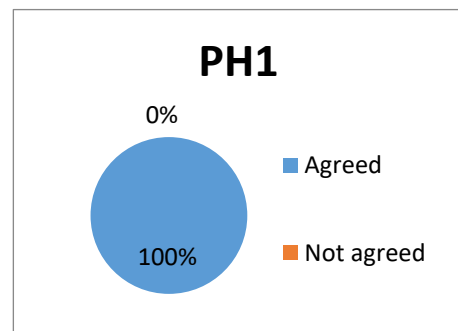
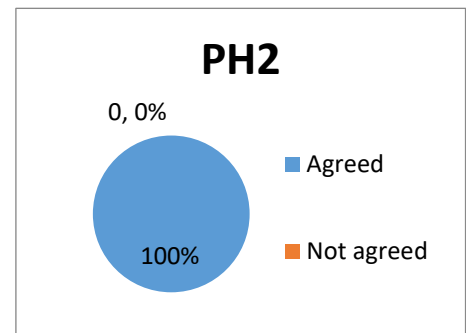


Figure 4.1: Analysis of phrase 1

*Phrase 2 - “Change in top management” (100%) –*

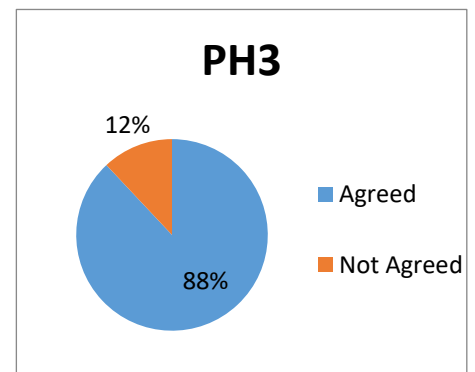
This phrase has been stated by all the respondents (100%) as depicted by figure 4.2. All of them agreed that though the project is initiated in 2008, it got dragged till 2010 due to the changes in the top management. Due to the political reasons, chairman and the board of directors were changed in 2008. Hence, the appointed core team had to convince the next chairman and the board of directors on the project plan. They stated that the convincing period was long, and also it involves political aspects which dragged down the project implementation. Further, there were changes in both pre implementation and post implementation due to different government perceptions since the steering committee is changing time to time.



*Figure 4.2: Analysis of phrase 2*

*Phrase 3 - “No communication and coordination” (88%) –*

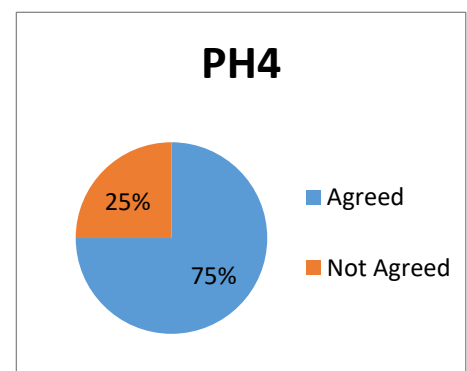
According to figure 4.3, 88% of the respondents said that there were no proper communication and coordination on the project. They agreed to the factor that the end users were not properly informed when the decisions were made. Further they mentioned that top management and the end users were not coordinated and the end users left isolated throughout the project implementation. As a result, the support expected from the end users was not given for the project due to lack of coordination.



*Figure 4.3: Analysis of phrase 3*

*Phrase 4 - Excessive government procedures (75%) –*

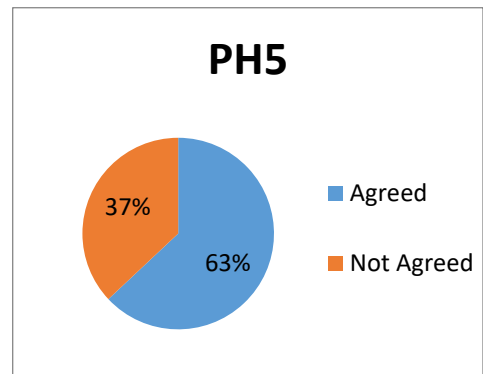
As per the figure 4.4, 75% of respondents agreed to the factor, that the delay was due to excessive government procedures. Tender acceptance, budget allocation, etc. demotivated the users and also the top management since it took more time than expected. Further they mentioned that taking extensive time for the decision making took off the attention of the end users and later they did not focus on the project due to the uncertainty of the decisions.



*Figure 4.4: Analysis of phrase 4*

*Phrase 5 - Low computer literacy (63%) –*

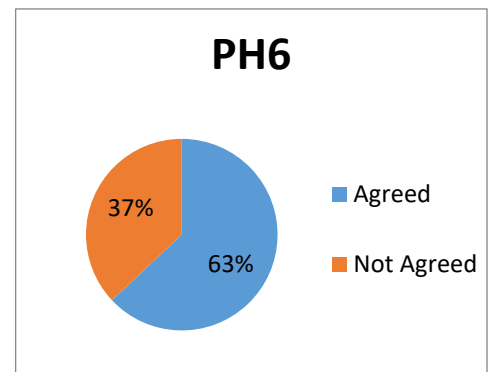
According to figure 4.5, 63% of respondents stated that low computer literacy had a major impact on the implementation. Prior to the SAP system CPSTL had another system for their day to day operations. Some functions used the earlier system; hence some employees had the computer literacy to manage a computer. However, the employees of the new functions which were opened due to the requirements of the new SAP system, had a low computer literacy which resulted on resistance to change due to the fear of individual failure and loss.



*Figure 4.5: Analysis of phrase 5*

*Phrase 6 - Loss of status and power (63%) –*

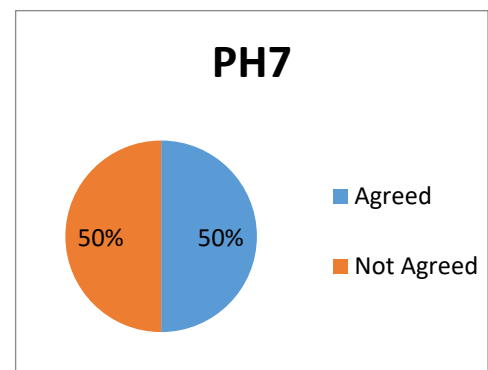
Loss of status and power was stated as another reason for user resistance by 63% of respondents as per the figure 4.6. They mentioned that they have observed most of the users had a fear for the new system due to the feeling of loss of status and power. Further they mentioned that some users did not provide the data, and did not reveal some of the processes which they are responsible, due to the fear of losing their status and power.



*Figure 4.6: Analysis of phrase 6*

*Phrase 7 - Heavy work load since the parallel run (50%) –*

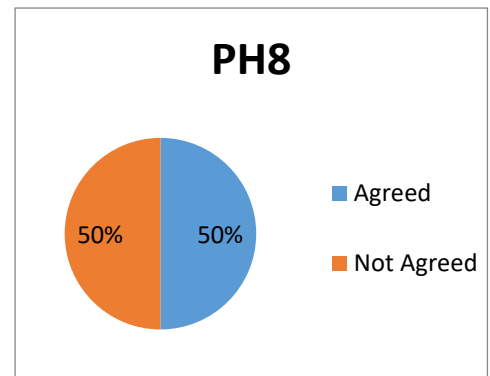
All the interviewees in the IT function mentioned that they had a heavy work load in the implementation phase (figure 4.7). This was because they had to work with the existing old system as well as to learn and train the new system and reengineer the processes. They mentioned that some of the employees in IT function resisted the new change due to the heavy work load they had in the implementation period.



*Figure 4.7: Analysis of phrase 7*

*Phrase 8 - Core team was not capable enough (50%) –*

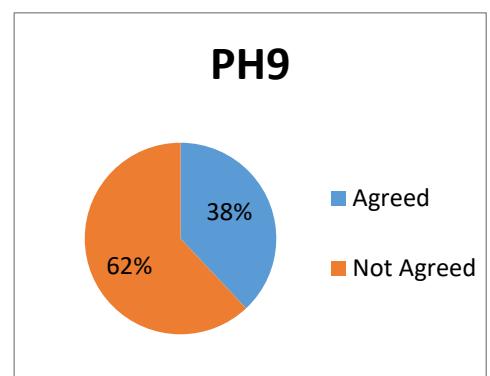
According to figure 4.8, 50% of the respondents mentioned that they did not have capable core team to proceed with the implementation. The core team was not balanced towards the three modules. Most of the core team members were from CPC where only the finance functionality has adopted. They mentioned that there were conflicts among the team allocation and as well as team coordination and communication.



*Figure 4.8: Analysis of phrase 8*

*Phrase 9 - Unknown functionalities (38%) –*

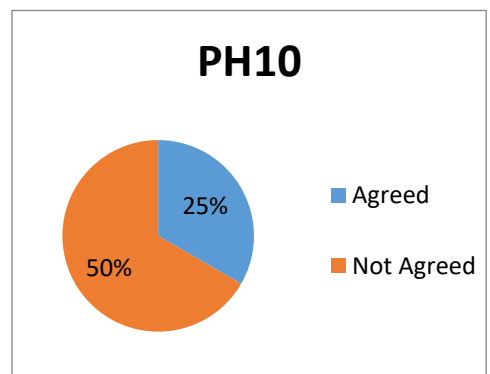
According to figure 4.9, 38% of respondents mentioned that unknown functionalities of SAP system along with process reengineering were also resulted in end user resistance. The routines of the users were changed due to process changes and in result resistance to change occurred. Further, some processes in sales function has changed totally, hence, the resistance was seemed to be high in the sales function.



*Figure 4.9: Analysis of phrase 9*

*Phrase 10 - Conflicts among colleagues (25%) –*

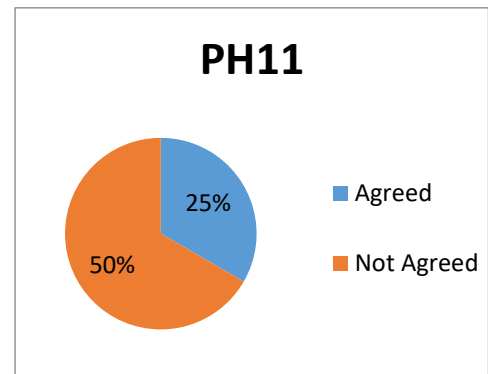
As per the figure 4.10, 25% of respondents mentioned that due to the allocation of the core team, some felt that they were neglected, and did not support for the implementation.



*Figure 4.10: Analysis of phrase 10*

*Phrase 11 - Thinking that old system is better (25%) –*

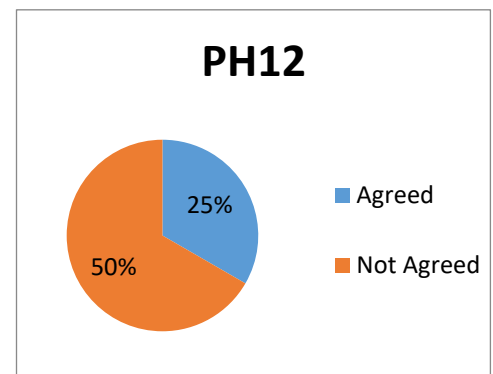
As per the figure 4.11, some respondents (25%) mentioned that compared to some functionalities, the previous system is better. And they also mentioned that considering some features such as validation, ease of use, the old system is better.



*Figure 4.11: Analysis of phrase 11*

*Phrase 12 - Not sufficient hardware (25%) –*

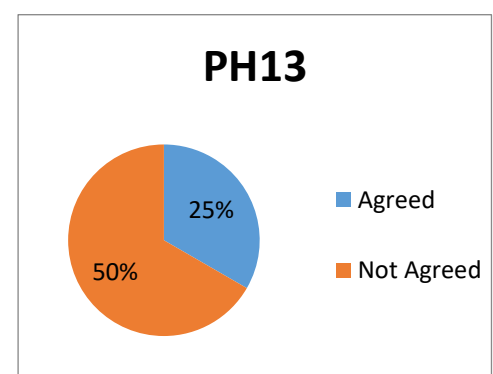
According to figure 4.12, 25% of respondents stated that some users were not given sufficient hardware such as computers, printers to proceed with the new system. Some mentioned that there were network issues and network was not stable in the go live phase. Due to lack of hardware and poor network connection people were distressed about the working environment and resisted on the new change.



*Figure 4.12: Analysis of phrase 12*

*Phrase 13 - Involvement of the end users in decision making is less (25%) –*

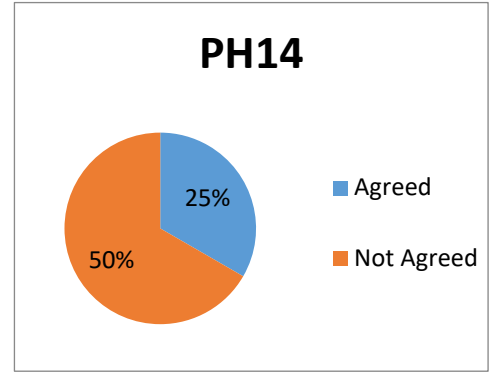
Figure 4.13 depicts that 25% of the respondents mentioned that the end users did not involve in decision making. They mentioned that if there would be middle level meetings for each and every end user the user resistance would be much lower. Further, they stated that by having meetings, the users will gain knowledge on the project and benefits of the project. Another 50% of respondents agreed to this statement to some extent. They stated that this is not practical when considering the public sector organizations. Other 25% argued that end users should follow the decision of the top management and proceed with the project decision.



*Figure 4.13: Analysis of phrase 13*

*Phrase 14 - End users did not practice the trainings they have received (25%) –*

As per the figure 4.14, 25% of the respondents mentioned that though the trainings were provided end users did not participate for those sessions. Further, they mentioned that the users who participated, did not practice the trainings they received. Therefore the end user resistance occurred since they were not familiar with the system.



*Figure 4.14: Analysis of phrase 14*

*Table 4.1: Reasons for user resistance*

No	Reason for user resistance	% stated
i.	Loss of status	50%
ii.	Lack of communication between top-management and end users	100%
iii.	Lack of user Involvement in the Development Process	100%
iv.	Changes in job content	88%
v.	Lack of resources	25%
vi.	Lack of training and education	25%
vii.	Loss of power	50%
viii.	Usability issues and resistance to technology	88%
ix.	User Expectations	88%
x.	Changes in working environment	63%

Based on the table 4.1, seven (7) factors were selected for the questionnaire based on the perspective of the top management.

- i. Lack of communication between top-management and end users
- ii. Lack of user Involvement in the Development Process
- iii. Changes in job content
- iv. Lack of training and education
- v. Usability issues and resistance to technology
- vi. User Expectations
- vii. Changes in working environment

Loss of status and loss of power are psychological factors, which are not major reasons when it comes to the user resistance in public sector organizations. Power and status are a combination which comes with the designations and job roles. In

public sector organizations job roles and titles will not change due to an implementation of a system (Dent et al., 1999, Watson et al., 2003, Chang et al., 2001). Hence loss of power and status will not be a major factor regarding this situation.

Further, lack of resources was not separately taken as a factor. Resources should be provided for the users when using the system and as well as for the training sessions. Therefore it included in the both factors training and working environment.

In addition to the user resistance reasons, the users mentioned regarding the user resistance behaviors as well. Those behaviors are summarized as follows;

*Phrase 15 - Did not hand over the data (63%) –*

According to figure 4.15, 63% of the respondents mentioned that some functions did not hand over the master data and other process information to proceed with the implementation. Hence some of the members in IT team had to work hard on preparing the data. Further, some users have provided incorrect data and there were conflicts among the functions due to the resistance occurred. They further mentioned that this was mainly due to uncertainty and unfamiliarity regarding the project.

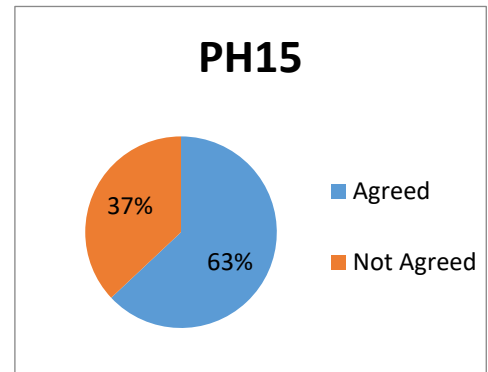


Figure 4.15: Analysis of phrase 15

*Phrase 16 - Did not share their knowledge and experience with others (50%) –*

As per the figure 4.16, 50% of the respondents mentioned that due to resistance some users who are responsible for a particular process did not share the sensitive information with the implementation team. Due to that some of the processes are still using manual entries in addition to the system.

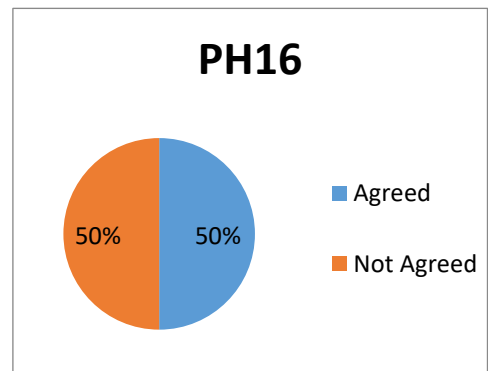


Figure 4.16: Analysis of phrase 16

*Phrase 17 - Did not report to the work (38%) –*

According to the figure 4.17, 38% of the respondents stated that, some of the users did not report to the work in the implementation period. Hence, some functions were in a delay on implementation.

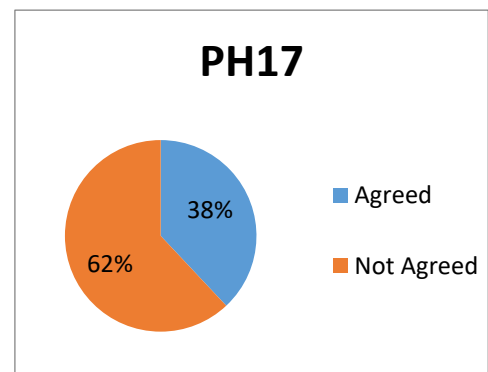
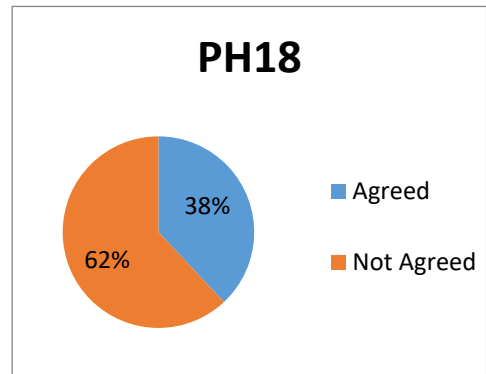


Figure 4.17: Analysis of phrase 17

*Phrase 18 - Did not attend for the training (38%) –*

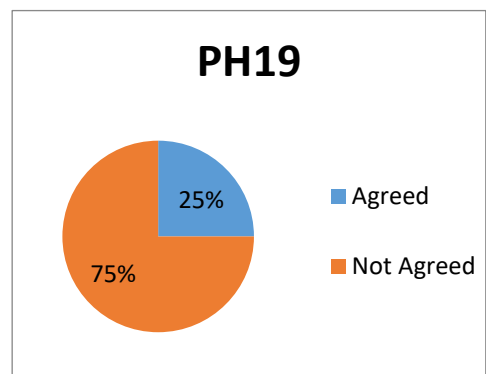
According to figure 4.18, 38% of the respondents mentioned that the users did not participate for the trainings to show the resistance. Further they mentioned that they complained about their work load and did not have time to participate for the trainings. Moreover they mentioned that this resistance was mainly due to misunderstandings and miscommunication regarding the new project.



*Figure 4.18: Analysis of phrase 18*

*Phrase 19 - End users like to work in SAP but not the management (25%) –*

As an additional comment, 25% of the respondents mentioned that higher level of resistance occurred from the top management rather than the lower level employees. This shows in figure 4.19. Further they stated that the implementation delay was caused mainly due to the resistance and the conflicts among the top management.



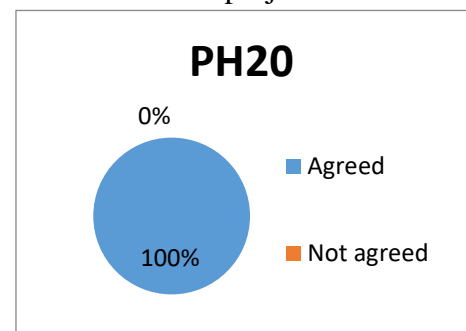
*Figure 4.19: Analysis of phrase 19*

***How do different change management strategies apply for managing different types of user resistance with ERP?***

*Phrase 20 - Proper plan and documentation (100%) –*

As per the figure 4.20, all the respondents stated that there should be a proper plan to proceed with a successful project implementation. Further, they have mentioned that if they had a proper plan with milestones and dates they could focus more on the project, since even core team members did not have a clear idea on the project.

Moreover, they have mentioned that it was good to have a proper documentation of the project implementation to avoid conflicts among the board of directors and the steering committee. As earlier mentioned, one of the reasons for user resistance was the changes in top management; hence it took



*Figure 4.20: Analysis of phrase 20*



some time to convince the idea about the project implementation to the committee. If they had documented the project plan properly it would be easier to convince the board and reduce the delay in implementation.

*Phrase 21 - Open communication 88% -*

According to figure 4.21, 88% of respondents agreed that there should be a plan of open communication from the top management to lower level of employees. Prior to the ERP implementation the concept of the project implementation was not properly communicated. Hence, the end users felt neglected and it is resulted in end user resistance. The other 12% mentioned that it would be impossible to communicate each and every decision to the lower level since, the CPSTL is a large organization and it would not be practical. But the majority stated that the end users

would feel the responsibility towards the project and involve more for the project if the communication was satisfactory.

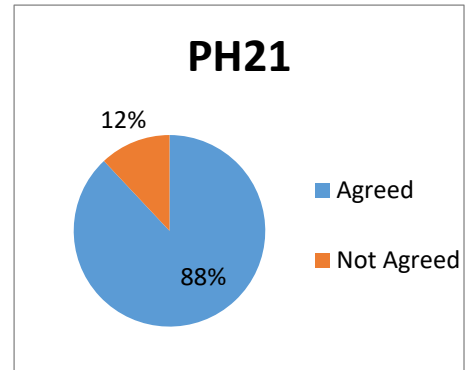


Figure 4.21: Analysis of phrase 21

*Phrase 22 - Hire data entry operators without any replacements (88%) –*

As per the figure 4.22, 88% of respondents cited that they hired data entry operators for temporary basis to replace the users who are on leave intentionally. Since this is a public sector organization the top management could not dismiss any employee, rather they could hire the temporary employees to make the implementation project successful. By applying this strategy the other employees were motivated and assisted the idea of the implementation. This has also increased the speed of the implementation since they hired the employees form younger generation.

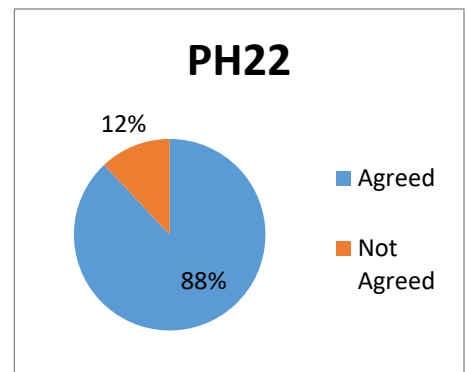
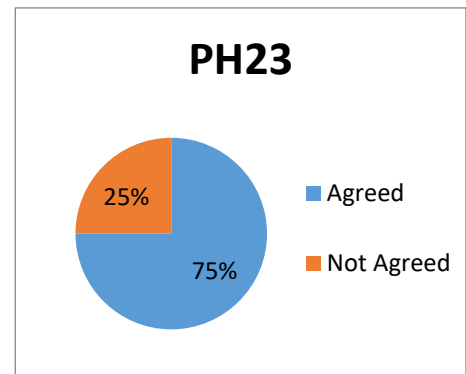


Figure 4.22: Analysis of phrase 22

*Phrase 23 - Communicate on benefits of using SAP (75%) –*

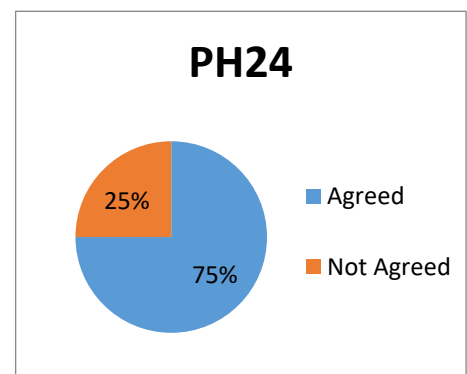
According to the figure 4.23, 75% of respondents stated that the benefits of using SAP should be communicated to the end users to convince them about the project implementation. End users should be convinced on how their work routine changes due to the system and the easiness of using the system. By communicating about the benefits of using SAP system, resistance can be reduced and delay in implementation would also be reduced.



*Figure 4.23: Analysis of phrase 23*

*Phrase 24 - SAP system training along with basic Computer Training (MS word / MS Excel) (75%) -*

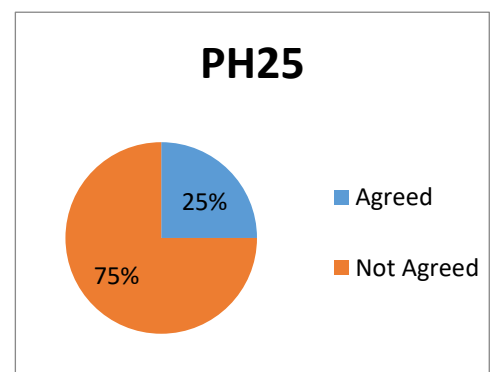
As per the figure 4.24, 75% of the respondents mentioned that basic computer training is needed prior to the implementation to ensure the skills of the employees are up to the required level. IT team of CPSTL has provided training for Microsoft Excel and Microsoft Word to reduce the uncertainty level of the employees. Further they have mentioned that this strategy reduced the resistance of the employees by considerable level.



*Figure 4.24: Analysis of phrase 24*

*Phrase 25 - Cannot change the attitudes of the people easily (25%) -*

From the sample, 25% of respondents stated that, though they have used change management strategies to overcome the resistance of the end users it was impossible to change the attitudes of the people so easily. This shows in figure 4.25. Therefore the resistance of some users could not be eliminated and the core team had to work with them throughout the implementation. This resistance and conflicts can be seen in some functions since 2008.



*Figure 4.25: Analysis of phrase 25*

Table 4.2: Change management strategies

Change management strategy	% Stated yes	Comments
Involve employees in development of new systems to encourage a feeling of ownership.	88%	Other 12% mentioned that involving end users for the development is impossible since the number of users is large. Remaining 88% mentioned that this strategy is effective, but the committee did not use this strategy effectively.
Provide employees with information regarding system changes to preserve ownership, and communicating ERP benefits.	100%	All the respondents agreed to this strategy. They mentioned that though the end users are not involved in the development process, they should aware about the progress and benefits of the implementation project.
Initiate morale boosting activities (e.g., company parties and newsletters, to promote community).	88%	88% of respondents agreed to this strategy.
Train employees to be effective users of the new system.	100%	All agreed to this. They mentioned that the end users are trained on the SAP system, and further they are given basic computer training.
Receive feedback from the users regarding the training.	63%	63% agreed to this. They have mentioned that this is very effective, but in the initial phase they did not receive any feedback from end users.
Conduct orientation sessions to prepare for change.	63%	63% agreed to this. But they mentioned that the orientation sessions were not given.
Document standards so new procedures are easy to learn.	100%	All agreed to the strategy of documentation. They mentioned that each module got user manuals and provided to the users.
Provide user support.	100%	100% agreed to this point. They stated that IT function has been providing user support since the implementation of the system.
Clearly establish in advance the demarcations of authority.	88%	88% agreed to this point. They mentioned that the new functions which were started due to the SAP implementations have got the new line of command, but the other functions were not.

Upgrade work environment (e.g., more space and design for comfort, to improve atmosphere).	100%	All agreed to this point. They stated that all functions have got the resources they required for the new system.
Alter job titles to reflect increased responsibility to clarify job roles.	63%	Though 63% agreed to this strategy, they mentioned that this is impossible in public sector organizations because designations and jobs are set according to the policies and standards.
Arrange job transfers to avoid users with no interest in new procedures.	63%	Though 63% agreed to this strategy, they mentioned that this is impossible in public sector organizations because designations and jobs are set according to the policies and standards.
Political Support.	0%	Respondents mentioned that though top management can easily obtain political support for the implementation, it is not an effective strategy.
Provide customizations to the system which will assist user friendliness of the system.	100%	All agreed to this point. Respondents from the IT team mentioned that they are providing the customizations and change requests after a feasibility analysis.
Reward ideas that will improve throughput to encourage users.	63%	63% of respondents agreed to this strategy. But they mentioned that, due to government policies and procedures it is impossible to provide rewards in an organization like CPSTL.
Call a hiring freeze until all displaced personnel are reassigned in order to avoid layoffs.	88%	88% of respondents agreed to this and further they mentioned that they have used this strategy when there were users who did not like to work with the system. Other 12% mentioned that using this strategy led to conflicts among employees.
Allow readjustment period to the new system.	88%	88% of respondents agreed to this strategy. They mentioned that due to the time limitations and project delays the end users were not given sufficient time period to adjust.
Have expertise knowledge when implementing.	100%	All agreed to this strategy. Further they mentioned that they have taken the consultancy from the expertise throughout the implementation period.
Provide incentives	63%	63% agreed to this term. Others disagreed and they mentioned that providing incentives to particular users

		may create conflicts among employees since all the employees are not engaged with the system.
Top Management Support	100%	All agreed with this strategy. In order to avoid user resistance, top management support should be there. Among the respondents 25% mentioned that top management was not capable enough to handle the SAP implementation.
Provide sufficient resources	100%	All agreed that to avoid user resistance users should be provided with sufficient resources.

### 4.3 Survey Data Analysis

The copies of the questionnaires were sent to forty (40) respondents of the company and all the forms have been received.

Based on the table 4.1, there are seven (7) factors identified in this study, which are labeled as user resistance factors in ERP implementation, they are as follows:

- i. Lack of communication between top-management and end users
- ii. Lack of user Involvement in the Development Process
- iii. Changes in job content
- iv. Lack of training and education
- v. Usability issues and resistance to technology
- vi. User Expectations
- vii. Changes in working environment

Based on the literature, observations and expertise advises, seven (7) factors were identified, to determine the relationship between the dependent variable and the independent variables. The Pearson correlation coefficient analysis was done for the total sample of forty (40) responses to test the relationship of the seven (7) factors with the end user resistance. Bivariate relationships between the dependent variable and each of the independent variables were examined. It is known that the relationship is considered as positive, when the correlation coefficient is a positive figure, while relationship is considered as negative, when the correlation coefficient is negative. Further, the relationship is considered as strongly correlated when the coefficient value is closer to 1 and the relationship becomes weakly correlated when it is closer to 0.

### 4.3.1 Lack of Education and User training

#### Reliability Analysis

Table 4.3 shows that cronbach's alpha is greater than 0.7 for the three questions of the factor "Lack of education and training". Therefore the three questions are valid to test the statistics for this study.

Table 4.3: reliability analysis of education and training

Case Processing Summary		N	%
Cases	Valid	41	100.0
	Excluded <sup>a</sup>	0	.0
	Total	41	100.0

Reliability Statistics	
Cronbach's Alpha	N of Items
.931	3

a. Listwise deletion based on all variables in the procedure.

#### Frequency Distribution

Further, according to the table 4.4, the frequency distribution of the user training where mean is 2.7 which is more into the positive side of the measure. This means that majority of the employees are not satisfied with the training provided with the SAP implementation.

Table 4.4: Frequency distribution of education and training

Statistics		
Training		
N	Valid	41
	Missing	0
Mean		2.7236
Median		2.0000
Std. Deviation		1.34970

#### Correlation Analysis

Table 4.4 shows that, the correlation coefficient of the factor lack of end user training is 0.663 which has a significant positive correlation at 0.01 level between user resistance and lack of end user training. Therefore, this implies that there is a significant positive relationship between user resistance and end user training.

Table 4.5: Correlation analysis of education and training

Correlations		Res	Training
Res	Pearson Correlation	1	.663**
	Sig. (2-tailed)		.000
	N	41	41
Training	Pearson Correlation	.663**	1
	Sig. (2-tailed)	.000	
	N	41	41

\*\* Correlation is significant at the 0.01 level (2-tailed).

**Regression Analysis**

*Table 4.6: Regression analysis of education and training*

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.663 <sup>a</sup>	.440	.426	.78620

a. Predictors: (Constant), Training

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.950	1	18.950	30.658	.000 <sup>b</sup>
	Residual	24.107	39	.618		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), Training

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.733	.279		2.625	.012
	Training	.510	.092	.663	5.537	.000

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.6 implies that the end user training and education contributes 44% to the end user resistance in SAP implementation of CPSTL. This shows that though the top management assumes that the training and education given was sufficient for the end users, in the perspective of end users it is considerably low, and hence this affects the user resistance heavily.

### 4.3.2. Change in job content

#### *Reliability Analysis*

For the factor “change in job content”, the cronbach’s alpha is 0.831 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

*Table 4.7: reliability analysis of change in job content*

Case Processing Summary			Reliability Statistics		
		N	%	Cronbach's Alpha	N of Items
Cases	Valid	41	100.0	.831	3
	Excluded <sup>a</sup>	0	.0		
	Total	41	100.0		

a. Listwise deletion based on all variables in the procedure.

#### *Frequency Distribution*

*Table 4.8: Frequency distribution of change in job content*

Further, according to the table 4.8 the frequency distribution of the change in job content where mean is 3.3 which is more into the positive side of the measure. This means that majority of the employees have experienced the change in their job content due to the implementation of the new SAP system.

Statistics		
WI		
N	Valid	Missing
	41	0
Mean	3.3008	
Median	3.0000	
Std. Deviation	.91835	

#### *Correlation Analysis*

As per the table 4.9, the correlation coefficient of the factors between job content and the end user resistance is 0.042 which implies that the relationship between end user resistance and the job content does not have any significant relationship.

*Table 4.9: Correlation analysis of change in job content*

Correlations			
		Res	WI
Res	Pearson Correlation	1	.042
	Sig. (2-tailed)		.794
	N	41	41
WI	Pearson Correlation	.042	1
	Sig. (2-tailed)	.794	
	N	41	41



**Regression Analysis**

*Table 4.10: Regression analysis of change in job content*

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.042 <sup>a</sup>	.002	-.024	1.04979

a. Predictors: (Constant), WI

**ANOVA<sup>a</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.077	1	.077	.069	.794 <sup>b</sup>
	Residual	42.980	39	1.102		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), WI

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.965	.619		3.175	.003
	WI	.048	.181	.042	.264	.794

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.10 implies that the change in job content contributes 2% to the end user resistance in SAP implementation of CPSTL. This indicates that the job content does not contribute for the end user resistance as expected.

### 4.3.3 Lack of communication between top-management and end users

#### Reliability Analysis

As per the table 4.11, the cronbach's alpha for the factor "lack of communication between top management and end users" is 0.818 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

Table 4.11: reliability analysis of lack of communication

Case Processing Summary				Reliability Statistics	
		N	%	Cronbach's Alpha	N of Items
Cases	Valid	41	100.0	.818	3
	Excluded <sup>a</sup>	0	.0		
	Total	41	100.0		

a. Listwise deletion based on all variables in the procedure.

#### Frequency Distribution

Further, table 4.12 shows that the frequency distribution of the communication where mean is 2.2 which is more into the positive side of the measure. This means that majority of the employees agreed to the factor that the communication between top management and end users was not satisfactory when SAP is implemented.

Table 4.12: Frequency distribution of lack of communication

Statistics		
com		
N	Valid	41
	Missing	0
Mean		2.2033
Median		2.0000
Std. Deviation		.84287

#### Correlation Analysis

According to the table 4.12, the correlation coefficient of the factors between communication and the end user resistance is 0.628 which implies that the relationship between end user resistance and the communication has a significant positive relationship.

Table 4.13: Correlation analysis of lack of communication

Correlations		
	Res	com
Pearson Correlation	1	.628**
Sig. (2-tailed)		.000
N	41	41
Pearson Correlation	.628**	1
Sig. (2-tailed)	.000	
N	41	41

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Regression analysis

Table 4.14: Regression analysis of lack of communication

Variables Entered/Removed <sup>a</sup>			
Model	Variables Entered	Variables Removed	Method
1	com <sup>b</sup>	.	Enter

a. Dependent Variable: Res

b. All requested variables entered.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628 <sup>a</sup>	.395	.379	.81728

a. Predictors: (Constant), com

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.007	1	17.007	25.461	.000 <sup>b</sup>
	Residual	26.050	39	.668		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), com

Above results of regression analysis shown in table 4.14, implies that the communication of the top management with end users contributes 39.5% to the end user resistance in SAP implementation of CPSTL. This indicates that communication of the top management heavily effect the end user resistance in CPSTL.

### 4.3.4 Lack of user involvement in the development process

#### Reliability Analysis

According to the table 4.15, the cronbach’s alpha for the factor “lack of user involvement in the development process” is 0.734 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

Table 4.15: reliability analysis of lack of user involvement

Case Processing Summary			Reliability Statistics	
		N	%	
✓/Cases	Valid	41	100.0	
	Excluded <sup>a</sup>	0	.0	
	Total	41	100.0	
			Cronbach's Alpha	N of Items
			.734	3

- a. Listwise deletion based on all variables in the procedure.

#### Frequency Distribution

Further, based on the table 4.16, the frequency distribution of the communication where mean is 2.5 which is more into the positive side of the measure. This means that majority of the employees agreed to the factor that the end users were not involved in the development process.

Table 4.16: Frequency distribution of lack of user involvement

Statistics		
Inv		
N	Valid	41
	Missing	0
Mean	2.5935	
Median	2.3333	
Std. Deviation	.86767	

#### Correlation Analysis

As per the table 4.17, the correlation coefficient of the factors between the involvement and the end user resistance is 0.535 which implies that the relationship between end user resistance and the involvement in the development process has a significant positive relationship.

Table 4.17: Correlation analysis of lack of user involvement

Correlations			
		Res	Inv
Res	Pearson Correlation	1	.535**
	Sig. (2-tailed)		.000
	N	41	41
Inv	Pearson Correlation	.535**	1
	Sig. (2-tailed)	.000	
	N	41	41

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## Regression Analysis

Table 4.18: Regression analysis of lack of user involvement

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.535 <sup>a</sup>	.286	.268	.88789

a. Predictors: (Constant), Inv

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.311	1	12.311	15.617	.000 <sup>b</sup>
	Residual	30.745	39	.788		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), Inv

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.464	.442		1.049	.301
	Inv	.639	.162	.535	3.952	.000

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.18, implies that the involvement of end users in development process contributes 28.6% to the end user resistance in SAP implementation of CPSTL.

### 4.3.5 Usability issues and resistance to technology

#### Reliability Analysis

According to the table 4.19, the cronbach’s alpha for the factor “usability issues and resistance to technology” is 0.726 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

Table 4.19: Reliability analysis of usability issues

		N	%
Cases	Valid	41	100.0
	Excluded <sup>a</sup>	0	.0
	Total	41	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	N of Items
.726	3

Table 4.20: Frequency distribution of usability issues

#### Frequency Distribution

Further, table 4.20 shows that the frequency distribution of the resistance to technology where mean is 3.8 which is more into the negative side of the measure. This means that majority of the employees did not agree that they had usability and technology issues when the SAP system is implemented.

Tech		
N	Valid	41
	Missing	0
Mean		3.8537
Median		4.0000
Std. Deviation		.73428

#### Correlation Analysis

Table 4.20 shows that, the correlation coefficient of the factors between the involvement and the end user resistance is 0.381 where the correlation is significant at the 0.05 level, which implies that the relationship between end user resistance and the technology and usability issues has a moderate positive relationship.

Table 4.20: Correlation analysis of usability issue

		Res	Tech
Res	Pearson Correlation	1	.381*
	Sig. (2-tailed)		.014
	N	41	41
Tech	Pearson Correlation	.381*	1
	Sig. (2-tailed)	.014	
	N	41	41

\*. Correlation is significant at the 0.05 level (2-tailed).

## Regression Analysis

Table 4.21: Regression analysis of usability issues

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.381 <sup>a</sup>	.145	.124	.97132

a. Predictors: (Constant), Tech

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.262	1	6.262	6.637	.014 <sup>b</sup>
	Residual	36.795	39	.943		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), Tech

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.045	.820		.055	.956
	Tech	.539	.209	.381	2.576	.014

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.21 implies that the usability and technology issues contribute 14.5% to the end user resistance in SAP implementation of CPSTL. Though the correlation coefficient is weak this factor has a significant contribution for the end user resistance.

### 4.3.6 User Expectations

#### Reliability Analysis

According to the table 4.22 the cronbach's alpha for the factor "user expectations" is 0.752 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

Table 4.22: Reliability analysis of user expectations

Case Processing Summary				Reliability Statistics	
		N	%	Cronbach's Alpha	N of Items
Cases	Valid	41	100.0	.752	3
	Excluded <sup>a</sup>	0	.0		
	Total	41	100.0		

a. Listwise deletion based on all variables in the procedure.

Table 4.23: Frequency distribution of user expectations

#### Frequency Distribution

Further, table 4.23 depicts that the frequency distribution of the user expectations where mean is 2.8 which is more into the positive side of the measure. This means that majority of the employees did not agree that the new system implementation met the user expectations.

Statistics		
Exp		
N	Valid	41
	Missing	0
Mean		2.8862
Median		2.6667
Std. Deviation		.96784

Table 4.24: Correlation analysis of user expectations

#### Correlation Analysis

Table 4.24 shows that the correlation coefficient of the factors between the user expectations and the end user resistance is 0.612 where the correlation is significant at the 0.01 level, which implies that the relationship between end user resistance and the user expectations has a significant positive relationship.

Correlations			
		Res	Exp
Res	Pearson Correlation	1	.612**
	Sig. (2-tailed)		.000
	N	41	41
Exp	Pearson Correlation	.612**	1
	Sig. (2-tailed)	.000	
	N	41	41

\*\* . Correlation is significant at the 0.01 level (2-tailed).



## Regression Analysis

Table 4.25: Regression analysis of user expectations

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.612 <sup>a</sup>	.374	.358	.83122

a. Predictors: (Constant), Exp

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.110	1	16.110	23.317	.000 <sup>b</sup>
	Residual	26.946	39	.691		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), Exp

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.229	.413		.556	.582
	Exp	.656	.136	.612	4.829	.000

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.25 implies that the user expectations contribute 37.4% to the end user resistance in SAP implementation of CPSTL.

### 4.3.7 Working Environment / User support

#### Reliability Analysis

According to the table 4.26, the cronbach's alpha for the factor "working environment" is 0.742 which is greater than 0.7. Therefore the three questions are valid to test the statistics for this study.

Table 4.26: Reliability analysis of working environment

		N	%
Cases	Valid	41	100.0
	Excluded <sup>a</sup>	0	.0
	Total	41	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	N of Items
.742	3

Table 4.27: Frequency distribution of working environment

#### Frequency Distribution

Further, as per the table 4.27, the frequency distribution of the working environment where mean is 3.8 which is more into the negative side of the measure. This means that majority of the employees did not agree that the working environment is not satisfactory.

WE		
N	Valid	41
	Missing	0
Mean		3.8618
Median		4.0000
Std. Deviation		1.25604

#### Correlation Analysis

According to the table 4.28, the correlation coefficient of the factors between the working environment and the end user resistance is 0.263 where the correlation is low, which implies that the relationship between end user resistance and the working environment does not have a significant relationship.

Table 4.28: Correlation analysis of working environment

		Res	WE
Res	Pearson Correlation	1	.263
	Sig. (2-tailed)		.097
	N	41	41
WE	Pearson Correlation	.263	1
	Sig. (2-tailed)	.097	
	N	41	41

## Regression Analysis

Table 4.29: Regression analysis of working environment

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.263 <sup>a</sup>	.069	.045	1.01383

a. Predictors: (Constant), WE

ANOVA <sup>a</sup>						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.970	1	2.970	2.890	.097 <sup>b</sup>
	Residual	40.087	39	1.028		
	Total	43.057	40			

a. Dependent Variable: Res

b. Predictors: (Constant), WE

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.284	.518		2.481	.018
	WE	.217	.128	.263	1.700	.097

a. Dependent Variable: Res

Above results of regression analysis shown in table 4.29 implies that the working environment contributes 6.9% to the end user resistance in SAP implementation of CPSTL and this implies that though the top management assumes that working environment effects for the end user resistance, in the perspective of the end user it does not affect heavily.

## **5. RECOMMENDATIONS AND CONCLUSION**

This study suggests change management strategies which are adaptable to the context of ERP implementation. This study examines and analyzes the resistant reasons, and the desired management strategies identified for each reason. This chapter will discuss the research findings, suggest recommendations and future research areas.

### **5.1 Discussion of research findings**

As the initial stage of this study, interview sessions were conducted. These interviews were arranged to gain the views regarding the SAP implementation from the management perspective.

#### **5.1.1 Lack of communication between top management and end users**

This factor is identified as a major reason for end user resistance in this study. Based on the Phrase 1 in the Section 4.2, the respondents stated that they were not informed about the SAP implementation initially and the decision was completely taken by the board of directors.

According to the survey results, in the Section 4.3.3, 0.628 of correlation coefficient was shown between lack of communication and the user resistance. This is the second major reason for the user resistance in CPSTL as identified from the survey. According to the perspectives of both core team and the end users, communication between top management and end users was not satisfactory, hence the resistance occurred and this became the second major reasons for the end user resistance.

#### **5.1.2 Lack of user involvement in the development process**

According to the Table 4.1, it is agreed by all the core team members that the end users are not involved with the development process. However, in Phrase 13 in the Section 4.2, as an argument some respondents mentioned that it was impossible to involve the end users in this process since the number of end users is large. As they mentioned, to impress the ownership and responsibility towards the implementation project, it is mandatory to involve the end users in the implementation process. This could be achieved by appointing them as process owners and by providing them responsibilities. Members from the IT team stated that, as the current procedure, the process owners involve in the customizations and configurations through quality testing and providing requirements. They mentioned that if they have been approached this routine in the implementation process it would be more efficient.

According to the end users in the Section 4.3.4, depicts 0.535 of correlation coefficient with the end user resistance. This factor contributes 28.6% on end user

resistance in SAP implementation in CPSTL. This indicates that the lack of involvement of end users in development process has been the fourth major reason for end user resistance.

### **5.1.3 Changes in job content**

As shown in Phrase 7 in Section 4.2, this has been stated as a major factor for the end user resistance by the core team. Interviewees in the IT team mentioned that they had a heavy work load in the implementation phase. This was because they had to work with the existing old system and as well as to learn and train the new system and reengineer the processes.

In the view point of the end users in the Section 4.3.2, the correlation coefficient is 0.042 which is insignificant. Further, this factor contributes only 2% for the end user resistance. This implies though the top management assumes that the users resist towards the new system due to the changes in their job content, it is not a significant factor in the view point of the end users.

### **5.1.4 Lack of training and education**

Training and education has been specified as a major factor for the success of the ERP implementation by several literatures. Given in Table 4.1, in the perspective of the core team members of the CPSTL they all agreed with the factor on the resistance might occur due to lack of training. According to the Phrase 24, they all mentioned that the end users are provided with sufficient training sessions on the system and they are provided with basic computer training of Microsoft Word and Excel by considering the low computer literacy of the users. Further, they mentioned that some users did not participate for the trainings as a resistance behavior.

As per the perspective of the end users shown in Section 4.3.1, this factor has been considered as the first major reason for the end user resistance. Correlation coefficient between end user resistance and the user trainings is 0.663, which is the highest among the factors considered. Further the contribution of the factor of user trainings for the end user resistance is 44%. Even though, the core team stated that they have provided enough training, end users did not grasp it effectively.

### **5.1.5 Usability issues and resistance to technology**

According to Phrase 5 in Section 4.2, 63% of respondents stated that low computer literacy had a major impact on the implementation. Prior to the SAP system, CPSTL had an in-house built stand-alone system for their day to day operations. Therefore, some employees who used the earlier system had the computer. However, when considering the newly appointed employees as per the requirements of the SAP

system had a low computer literacy. Hence, they resisted the change due to the fear of individual failure and loss.

In correspondence with end users given in section 4.3.5, the correlation coefficient of the two factors is 0.381 which is moderate. This indicates though the top management thinks the resistance occurred due to the technology and usability issues, end users did not consider it heavily.

#### **5.1.6 User expectations**

As per the Table 4.1, 88% of the respondents mentioned that due to user expectations resistance may occur. When considering the Phrase 9 given in section 4.2 some respondents (25%) mentioned that comparing some functionality the previous system is better. And they also mentioned that considering some features such as validation, ease of use, the legacy system they had previously is better.

As shown in the Section 4.3.6, in the perspective of the end users, correlation coefficient of the two factors is 0.612 which implies that it provides a major effect on end user resistance.

#### **5.1.7 Changes in working environment**

According to the Phrase 12 in Section 4.2, 25% of respondents stated that some users were not given sufficient hardware such as computers, printers to proceed with the new system. Some mentioned that there were network issues and network was not stable in the go live phase. Due to lack of hardware and poor network connection people were distressed about the working environment and resisted on the new change. According to the Table 4.1, 63% of respondents agreed to the factor that, changes in working environment may affect end user resistance.

Considering the Section 4.3.7, the correlation coefficient of the two factors is 0.263 which is moderate. This indicates that the changes in working environment do not affect the end user resistance heavily.

## **5.2 Recommendations**

In this section, recommendations are provided based on the research findings. According to the Table 2.2, fifteen (15) factors for the reasons for user resistance along with nineteen (19) change management strategies (table 2.4 and table 2.5) were identified in the literature. By having interviews with the core team members, reasons for user resistance were reduced to seven (7) to obtain an effective questionnaire (Section 4.1). Later seven (7) major resistance reasons were analyzed, in the perspective of the end users and the core team members. Finally, change management strategies are recommended for each user resistance reason.

### **5.2.1 Lack of communication between top-management and end users**

This can be avoided by having following strategies;

- Communicating the progress of the implementation project to the end users (Table: 2.5 and Table: 4.2).
- Should communicate how the tasks of the end users fit in the big picture of the implementation and how it will impact on their daily tasks (Table: 4.2).
- After the launch of the system, communicate continuously regarding the issues and the software usage (Table: 4.2).
- Have a proper communication plan with specified line of command (Table: 2.5).
- Provide employees with information regarding system changes to preserve ownership (Table: 4.2).

### **5.2.2 Lack of user involvement in the development process**

Lack of user involvement can be eliminated by;

- Involve employees in development of new systems to encourage a feeling of ownership (Table: 4.2).
- Initiate morale-boosting activities (e.g., company parties and newsletters, to promote community) (Table: 4.2).
- Conduct orientation sessions to prepare for change (Table: 4.2).
- Allow readjustment period to the new system (Table: 2.5).

### **5.2.3 Change in job content**

The user resistance occurred due to the changes in job content can be eliminated by practicing following strategies;

- Should communicate how the tasks of the end users fit in the big picture of the implementation and how it will impact on their daily tasks (Table: 4.2).
- Allow readjustment period to the new system (Table: 2.5).
- Provide sufficient resources (Table: 2.5 and Table: 4.2).

### **5.2.4 Lack of training and education**

Lack of trainings and education can be avoided by following the below mentioned strategies;

- Provide trainings prior to the ERP implementation as well as after the changes in the system (Table: 2.5 and Table: 4.2).
- Provide sufficient resources for the trainings (Table: 2.5 and Table: 4.2).
- Provide user manuals for the new system (Table: 4.2).
- Receive feedback from the users regarding the training and based on the feedback improve the training sessions (Table: 4.2).

### **5.2.5 Usability issues and resistance to technology**

Usability issues of the system and the user resistance occurred due to technological issues can be eliminated by following the strategies such as;

- Provide customizations to the system which will assist user friendliness of the system (Table: 2.5 and Table: 4.2).
- Provide user support (Table: 4.2).
- Provide user manuals for the new system (Table: 4.2).



### **5.2.6 User expectations**

Expectations of the users regarding the system can be enhanced by the following strategies;

- Provide customizations to the system which will assist user friendliness of the system (Table: 2.5 and Table: 4.2).
- Provide user support (Table: 4.2).
- Provide user manuals for the new system (Table: 4.2).
- Open communication regarding the system issues (Table: 2.5 and Table: 4.2).
- Communicate the benefits of using the new system (Table: 2.5 and Table: 4.2).

### **5.2.7 Changes in working environment**

End user resistance may occur due to the changes in working environment. Hence the working environment can be upgraded by ensuring the following strategies;

- Upgrade work environment (e.g., more space and design for comfort and to improve atmosphere) (Table: 2.5 and Table: 4.2).
- Provide sufficient resources (Table: 2.5 and Table: 4.2).
- Provide user support (Table: 4.2).

## **5.3 Research limitations**

This study has been conducted based on the following limitations;

- Company normal process cannot be disturbed due to the research.
- Some methods and information are protected from researchers due to confidentiality.
- Company process, methods cannot be published with research.
- Language barriers (Some end users are not fluent in English, hence some interviews and questionnaire are carried in Sinhala)
- Some users are reluctant to share of true information regarding the ERP implementation.
- Since the implementation was carried in 2010, some information regarding ERP implementation may not be captured.

#### **5.4 Future research**

This study identified significant information on end user resistance and relevant change management strategies. By analyzing the findings, some opportunities were arisen for further studies as follows;

- How to conduct trainings on ERP implementation for the end users in public sector organizations effectively?
- How the psychological factors such as loss of power and status, uncertainty can be affected for ERP implementation?
- Change management strategies for the resistance occurred due to the psychological factors.
- Change management strategies based on the resistance behaviors.

## 5.5 Conclusion

This research has been conducted to identify the best change management strategies which can be applied for managing different types of user resistance when implementing ERP systems in organizations.

As the first step, user resistance theories and models are reviewed by conducting an in-depth analysis of literature review. To identify the reasons for end user resistance, ten (10) reasons have been analyzed from the findings of the literature review and the pilot survey (i.e. attached in Appendix C). These reasons have been reduced to seven (7) by conducting interview sessions for the core team members of the ERP implementation team of the CPSTL. Survey was distributed to obtain the perspective of the end users as an add-on to the interviews. It has revealed that all the seven (7) factors have positive relationship to the end user resistance. Based on the seven (7) factors identified from the data analysis and the interviews taken place, change management strategies have been identified. The strategies include which CPSTL has practiced in the implementation phase as well as findings from the extensive literature.

This research has identified the major reason for the end user resistance in CPSTL as lack of training and education (Table 4.5). Even though, the training sessions provided by the SAP implementation team was satisfactory according to the management perspective, when considering the end users it was not satisfactory. It is important to obtain feedback from the users at the end of the training sessions in order to improve the effectiveness of the trainings according to the feedback.

Further, lack of communication between top management and end users was being another reason for end user resistance in CPSTL (Table 4.13). Communicating the progress of the implementation project, will enrich the employees towards the project.

Moreover, lack of user involvement in the development process has also contributed to increase the end user resistance in CPSTL (Table 4.17). In system implementation, user requirements should be collected from the end users in order to have an effective and user friendly system. By involving the end users in the development process, will provide the end users a feeling of ownership towards the project. Hence, end user resistance will be reduced while enriching the employees.

The factor, user expectations has also become a major reason on end user resistance for SAP implementation in CPSTL (Table 4.24). Resistance for the earlier phases can be reduced by communicating and educating on the benefits of processing an ERP within an organization. Further, this may help the users to change their expectations regarding the system implementation positively.

Finally, as mentioned in objectives, change management strategies were identified in accordance with the user resistance reasons. These findings can be used as a guideline for the people who are responsible in the ERP implementation.

## REFERENCES

- Aladwani, A. M. (2001). Change management strategies for successful ERP implementation. *Business Process management journal*, 7(3), 266-275.
- Allen, D., Kern, T., & Havenhand, M. (2002, January). ERP critical success factors: an exploration of the contextual factors in public sector institutions. In *System Sciences, 2002.HICSS. Proceedings of the 35th Annual Hawaii International Conference on* (pp. 3062-3071). IEEE.
- Barker, T., & Frolick, M. N. (2003). ERP implementation failure: A case study. *Information Systems Management*, 20(4), 43-49.
- Beheshti, H. M. (2006). What managers should know about ERP/ERP II. *Management Research News*, 29(4), 184-193.
- Bingi, P., Sharma, M. K., & Godla, J. K. (1999). Critical issues affecting an ERP implementation. *IS Management*, 16(3), 7-14.
- Blick, G., Gullidge, T., & Sommer, R. (2000). Defining business process requirements for large scale public sector ERP implementations: A case study. *ECIS 2000 Proceedings*, 157.
- Chang, She-I; Guy Gable; Errol Smythe; Greg Timbrell. (2001). "A Delphi Examination of Public Sector ERP Implementation Issues, Proceedings of the International Computer Information Systems, Brisbane, Australia, 2001.
- Coetsee, L. (1999). From resistance to commitment. *Public Administration Quarterly*, 204-222.
- Dent, E. B., & Goldberg, S. G. (1999). Challenging "resistance to change". *The Journal of Applied Behavioral Science*, 35(1), 25-41.
- DeSanctis, G., & Courtney, J. F. (1983). Toward friendly user MIS implementation. *Communications of the ACM*, 26(10), 732-738.
- Helo, P., Anussornnitisarn, P., & Phusavat, K. (2008). Expectation and reality in ERP implementation: consultant and solution provider perspective. *Industrial Management & Data Systems*, 108(8), 1045-1059.
- Hirschheim, R., & Newman, M. (1988). Information systems and user resistance: theory and practice. *The Computer Journal*, 31(5), 398-408.
- Hong, K. K., & Kim, Y. G. (2002). The critical success factors for ERP implementation: an organizational fit perspective. *Information & Management*, 40(1), 25-40.
- Irimia R, Gottschling M (2016) Taxonomic revision of *Rochefortia* Sw. (Ehretiaceae, Boraginales). *Biodiversity Data Journal* 4: e7720. <https://doi.org/10.3897/BDJ.4.e7720>

- Janson, M. A., Woo, C. C., & Smith, L. D. (1993). Information systems development and communicative action theory. *Information & Management*, 25(2), 59-72.
- Jiang, J. J., Muhanna, W. A., & Klein, G. (2000). User resistance and strategies for promoting acceptance across system types. *Information & Management*, 37(1), 25-36.
- Kim, H. W., & Kankanhalli, A. (2009). Investigating user resistance to information systems implementation: A status quo bias perspective. *MIS quarterly*, 567-582.
- Klaus, T., Wingreen, S., & Blanton, J. E. (2007, April). Examining user resistance and management strategies in enterprise system implementations. In *Proceedings of the 2007 ACM SIGMIS CPR conference on Computer personnel research: The global information technology workforce* (pp. 55-62). ACM.
- Krovi, R. (1993). Identifying the causes of resistance to IS implementation: A change theory perspective. *Information & Management*, 25(6), 327-335.
- Lapointe, L., & Rivard, S. (2005). A multilevel model of resistance to information technology implementation. *MIS quarterly*, 461-491.
- Laumer, S., & Eckhardt, A. (2012). Why do people reject technologies: a review of user resistance theories. In *Information systems theory* (pp. 63-86). Springer New York.
- Marakas, G. M., & Hornik, S. (1996). Passive resistance misuse: overt support and covert recalcitrance in IS implementation. *European Journal of Information Systems*, 5(3), 208-219.
- Martinko, M. J., Zmud, R. W., & Henry, J. W. (1996). An attributional explanation of individual resistance to the introduction of information technologies in the workplace. *Behaviour & Information Technology*, 15(5), 313-330.
- Mohan, Shane. (2003). "Successful Systems Implementation", White Paper Deloitte and Touche, Public Sector. [http://www.deloitte.com/dtt/cda/doc/content/sys\\_imp\\_ps2.pdf](http://www.deloitte.com/dtt/cda/doc/content/sys_imp_ps2.pdf)
- O'Leary, Daniel. (2000). Enterprise Resource Planning Systems, Cambridge University Press, UK.
- Rivard, S., & Lapointe, L. (2012). Information technology implementers' responses to user resistance: nature and effects. *MIS quarterly*, 36(3), 897-920.
- Shang, S., & Su, T. (2004). Managing user resistance in enterprise systems implementation. *AMCIS 2004 Proceedings*, 23.
- Smith, H. A., & McKeen, J. D. (1992). Computerization and management: A study of conflict and change. *Information & Management*, 22(1), 53-64.
- Wagner, W., & Antonucci, Y. L. (2004, January). An analysis of the imagine PA public sector ERP project. In *System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on* (pp. 8-pp). IEEE.

Watson, E., Vaught, S., Gutierrez, D., & Rinks, D. (2003). ERP implementation in state government. *Annals of cases on Information Technology applications and management in organizations*, 5, 302-318.

Watson, Ed; Sylvia Vaught; Dan Gutierrez; Dan Rinks.(2003). "ERP Implementation in State Government", *Annals of IT Case Studies*, Idea Group Inc. 2003.

Wieder, B., Booth, P., Matolcsy, Z. P., & Ossimitz, M. L. (2006). The impact of ERP systems on firm and business process performance. *Journal of Enterprise Information Management*, 19(1), 13-29.

Xue, Y., Liang, H., Boulton, W. R., & Snyder, C. A. (2005). ERP implementation failures in China: Case studies with implications for ERP vendors. *International journal of production economics*, 97(3), 279-295.

Yin, R. K. (2013). *Case study research: Design and methods*. Sage publications.

## APPENDIX A: INTERVIEW QUESTIONS

### 1. *Background of interviewee*

- What is your involvement in the SAP implementation, time period you were involved in the project?

### 2. *Change*

- What degree of change has the SAP system had on your job. Please rate from 1 to 5?
- Scale from 1 to 5 how the SAP implementation affects the employees of your division by changing jobs and responsibilities?
- For you, what were the advantages and disadvantages of the project?
- What did you gain and lose because of the system implementation?

### 3. *Resistance*

- According to your knowledge what were the types of resistance that occurred during the implementation.
- Why do you think this resistance occurred?
- Do you think anything could have been done differently to reduce the level of resistance?
- What types of things, that you have done to avoid the user resistance in the initial phase?

### 4. *Reasons for user resistance*

.From your perspective, how would each of the following reasons for resistance arise with the potential end-users when implementing the SAP system?

- |   |         |
|---|---------|
| 1. Loss of status   | yes/ no |
| 2. Lack of communication between top-management and end users | yes/ no |
| 3. Lack of user Involvement in the Development Process        | yes/ no |
| 4. Change in job content                                      | yes/ no |
| 5. Lack of resources  | yes/ no |
| 6. Lack of training and education                             | yes/ no |
| 7. Loss of power  | yes/ no |
| 8. Usability issues and resistance to technology              | yes/ no |
| 9. User Expectations  | yes/ no |
| 10. Changes in working environment                            | yes/ no |

### 5. *Change Management Strategies*

From your perspective, how important is each of the following strategies to promote acceptance of the SAP system?

- a. Involve employees in development of new systems  
yes / no
- b. Open lines of communication between employees and management  
yes / no
- c. Provide employees with information regarding system changes  
yes / no
- d. Initiate morale-boosting activities, e.g., company parties and newsletters  
yes /no
- e. Pace conversion to allow readjustment period to new system  
yes / no
- f. Reward ideas that that will improve throughput  
yes / no
- g. Document standards so new procedures are easy to learn and reference  
yes / no
- h. Upgrade work environment following change, e.g., more space and design for comfort  
yes / no
- i. Alter job titles to reflect increased responsibility  
yes / no
- j. Call a hiring freeze until all displaced personnel are reassigned  
yes / no
- k. Provide Basic computer training / SAP training  
yes / no



## APPENDIX B: QUESTIONNAIRE

*Welcome to the end user resistance management survey!*

*First of all, let me thank you for taking our 2 min survey. You are a great help!*

*We from University of Moratuwa – MBA in IT are on a daring quest to collect the right data about employee resistance for SAP system in public sector organizations. Our target audience involves everyone who use SAP system in CPSTL. This is why we chose you!*

*And don't worry; your data is just for our survey so no need to provide your personal data. We promise!*

1. Department \_\_\_\_\_

2. Grade \_\_\_\_\_

3. Gender

- Male
- Female

4. Age

- Less than 25 years
- 25 – 30 years
- 30 – 40 years
- 40 – 50 years
- 50 – 60 years

5. Highest Education Qualification

- PHD
- Masters' Degree
- Bachelors' Degree
- Undergraduate
- Diploma
- A/L
- O/L

6. How confident are you with computers?

- Very Good
- Good
- Normal

- Poor
- Very Poor

7. I did not like to work with the SAP system when it is launched.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

8. I preferred the earlier system compared to the new SAP system when it is launched.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

9. I did not like the way of management launching the new SAP system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

10. There were insufficient training provided to me prior to the ERP implementation.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

11. There was insufficient training provided to me after ERP system goes live.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

12. Resources provided were inadequate to assist users during training.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

13. SAP implementation has totally changed my daily task activities.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

14. The use of the ERP system required my current job skills to be changed.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

15. There are a lot of time and effort to mastering the current way of my daily assigned task to deal with ERP system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree

- Disagree
- Strongly Disagree

16. Prior to ERP implementation the management did not talk to me about where my tasks fit in the big picture of the ERP environment and how ERP will impact on my work processes.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

17. The management has not arranged meeting sessions after ERP implementation that address broader ERP issues and the software usage.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

18. End-users were not kept informed about the progress of the project all the time and there is no clear line of command.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

19. I have not been involved in decision to adopt the ERP system from the beginning as well as receiving critical updated regarding the implementation and instructions for go live.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree

Strongly Disagree

20. I have not been involved on the project activities milestones timelines and sessions on how the new system will change my jobs.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

21. My change requests on the system functionalities are not timely provided and they are not up to the required level.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

22. Using new technology offered by ERP is difficult to me because of user interface in ERP system is complicated.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

23. Reporting tools provided by ERP system is complicated. I cannot easily export data in required report formats.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

24. Documentations like user manuals are not provided to study further on the system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

25. ERP system did not offer the same benefits as I expected (ease of use, UI design).

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

26. I thought the ERP system will reduce my workload and ease them, but it is not the case instead it provided to be complex system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

27. Management did not provide a sufficient time period to adjust to the new system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

28. I am not satisfied with the support and the consultancy given by the IT team.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

29. I am not satisfied with the working environment (space, comfort) provided to work with the new system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

30. I am not satisfied with the resources (printers, computers etc. ) provided for me with the new system.

- Strongly Agree
- Agree
- Slightly Agree
- Slightly Disagree
- Disagree
- Strongly Disagree

## APPENDIX C: PILOT INTERVIEW QUESTIONS AND RESULTS

1. What is your involvement in the SAP implementation, time period you were involved in the project?
2. What degree of change has the SAP system had on your job. Please rate from 1 to 5?
3. Scale from 1 to 5 how the SAP implementation affects the employees of your division by changing jobs and responsibilities?
4. For you, what were the advantages and disadvantages of the project?
5. What did you gain and lose because of the system implementation?
6. According to your knowledge what were the types of resistance that occurred during the implementation.
7. Why do you think this resistance occurred?
8. Do you think anything could have been done differently to reduce the level of resistance?
9. What types of things, that you have done to avoid the user resistance in the initial phase?

*Table C.1: Pilot interview results on reasons for user resistance*

Reason	% stated
Lack of communication between top-management and end users	100%
Lack of user Involvement in the Development Process	100%
Change in job content	100%
Lack of resources	100%
Lack of training and education	100%
Usability issues and resistance to technology	100%
User Expectations	100%
Changes in working environment	100%
Uncertainty	100%
Altering relationships	66%
Loss of status	33%
Loss of power	33%



*Table C.2: Pilot interview results on change management strategies*

Change management strategy	% Stated yes
Involve employees in development of new systems to encourage a feeling of ownership	100%
Provide employees with information regarding system changes to preserve ownership, communicating ERP benefits	100%
Train employees to be effective users of the new system	100%
Provide basic computer training and MS office training	100%
Document standards and user manuals	100%
Provide user support	100%
Clearly establish line of command	66%
Provide customizations to the system which will assist user friendliness of the system	100%
Provide readjustment period	66%
Have expertise knowledge when implementing	33%
Top Management Support	100%
Provide sufficient resources	33%