ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS
SCHOOL OF COMMERCE

Assessment of ERP-System Implementation Project Delay and Evaluation of Project Management Effectiveness: the case of Commercial Bank of Ethiopia

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Approval page

This MA thesis entitled with - *Assessment of ERP-System Implementation Project Delay and Evaluation of Project Management Effectiveness: the case of Commercial Bank of Ethiopia* - has been approved by the following examiners in partial fulfillment of the requirement for the degree of Master of Art in project management.

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I, Enqumesk Mekonnen declare that this research entitled - *Assessment of ERP-System Implementation Project Delay and Evaluation of Project Management Effectiveness: the case of Commercial Bank of Ethiopia* – is my own study and this study has not been presented for any university

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Endorsement

This is to certify that this research - *Assessment of ERP-System Implementation Project Delay and Evaluation of Project Management Effectiveness: the case of Commercial Bank of Ethiopia* – by Enqumesk Mekonnen for the partial fulfillment of Master of Art in project management at Addis Ababa University is an original work and not submitted earlier for any degree either at this university or any other university.

Research advisor

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ACRONYMS

CBE- Commercial Bank of Ethiopia

ERP – Enterprise Resource Planning

BPR – Business Process Re-engineering

ABSTRACT

The purpose of this study was to analyse delay causes of the ERP-system implementation project at Commercial Bank of Ethiopia and to evaluate effectiveness of the project management along with assessment of the challenges faced during implementation of the system. A qualitative as well as quantitative research approach with a descriptive research design was used for this study. Moreover, a total of 37 questionnaires were distributed and the collected 30 questionnaires were used for the analysis. According to the respondents, the key findings of this study indicate that, insufficient internal expertise, insufficient training, unrealistic project timeline and expanded project scope are found to be the top factors that contributed to implementation delay of the project. Moreover, the project management of this project is generally believed to be effective by the participants of this study. However, the study also indicates that lots of improvements are still required in some aspects of the project management knowledge areas. Furthermore, data issues and knowledge related issues were found to be the major challenges the project team members faced during implementation of the ERP-system. From this study it is concluded that the commonly known ERP-system implementation delay factors are also believed to be resulting the schedule overrun of CBE's ERP-system implementation project. And even if the project management is believed to be effective on average, lots of gaps still exist that are required to be filled. According to the results of this study, it is recommended if sufficient internal expertise are made available, appropriate trainings are provided, a mechanism is made available to keep good quality of data and if project management problems are timely monitored and the appropriate solutions are timely provided for the overall achievement of ERP-system implementation project success.

Key words: ERP, project delay, project management effectiveness

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Nowadays, the competition among businesses increased which makes organizations to strive to gain competitive advantages, increase work productivity and efficiency, reduce costs and get other benefits through implementation of integrated information systems (Lipaj and Davidavičienė 2013). Among Enterprise-wide systems, Enterprise Resource Planning programs are core software that coordinates information of many business processes within a company using a common database and shared management reporting tools (Monk and Wagner 2009). To get competitive advantages in their businesses, organisations spend millions of dollars on ERP systems however, if the ERP systems do not function as intended or if deadlines of the project implementation slip, it can disrupt business decision-making, productivity and profitability (Protiviti 2012). Result of a research on ERP implementation explains the three common critical failure factors in ERP implementation to be consultant effectiveness, poor project management effectiveness and poor quality of BPR (Wong and Scarbrough 2014).

As one of the three common critical failure factors of an ERP implementation, poor project management effectiveness could lead to failure of the project due to poor project management skills, limited knowledge of ERP and capability, failure to plan etc (Wong and Scarbrough 2014). A 2018 report on ERP shows 64% of the respondents in the survey reported their projects exceed their budget and 79% of them reported to have an over schedule (Panorama, 2018). However, a project is usually believed to be a success if the objectives are achieved within budget, schedule and with the accepted criteria (Davies 2019).

ERP projects display attributes of complex systems as they consist of interconnected elements or parts with related and unpredictable changes (Menon et al. 2019). And when projects are complex and unpredictable, they should be adjusted to the situation and the changed conditions have to be evaluated to balance cost, time and quality to be able to deliver the project successfully (Davies 2019). As a result, organisations holding responsibility for projects require having the capability of managing projects effectively (Archibald 2004).

This study tries to evaluate effectiveness of the project management in implementation of the ERP system at Commercial Bank of Ethiopia and tries to explore delay causes of the project as well as the challenges the project team faced during the implementation period. And from this study it is believed that important project management lessons can be identified for implementation of future projects.

1.2 Background of the Company

Commercial Bank of Ethiopia (CBE) was established in 1942 as State Bank of Ethiopia. After merging in 1974 with Addis Ababa Bank, the bank contributed to development of the country significantly. Being the leading African bank with a 711.96 billion birr asset, the bank is diligently serving its customers by opening more than 1456 branches across the country. As per the 2018 financial statement, the bank has deposit position of 451.8 billion birr and made a gross profit of 10.32 billion birr in 2018. The bank's number of customers was also registered to be 18.8 million in 2018. (CBE, n.d)

The bank's mission is to realize stakeholder's values through enhanced financial intermediation by deploying the best professionals and technology and its vision is to become a world-class bank by the year 2025.

As a strategy to attain its mission, the bank decided to re-engineer its business processes in 2011. Believing the organization would benefit from automation of its processes, the bank decided to implement Enterprise Resource Planning system in 2015. (Getachew 2018)

1.3 Statement of the Problem

Commercial Bank of Ethiopia signed a contract agreement with Tech Mahindra Ltd, for Enterprise Resource Planning (ERP) System Implementation worth USD 2,300,000 on July 10, 2015. The project was set to be finalized within 10 months (Addis Fortune 2015). However, the first phase of ERP went live in July, 2017 followed by full project going live in December, 2017 (Getachew 2018). Accordingly, the project took more than two years to set all the modules to go live which exceeded its original time schedule by more than a year and a half.

What causes delay of the ERP project implementation is a question that is required to be assessed. In relation to this, effectiveness of the project management has to be assessed to

understand whether the project management environment was conducive enough for the project team members to effectively implement the tasks at hand. Moreover, assessing the challenges the team members faced during implementation of the modules would be highly beneficial as the lessons learned during implementation help the organization as well as other interested organizations and individuals in different aspects.

1.4 Research Questions

1. What are causes of the project delay?

2. How effective is the project management of the project?

3. What were the challenges faced in implementation of the ERP modules that were set to 'Go-live'?

1.5 Objectives of the Study

1.5.1 General objectives

The general objective of this study is to analyse delay causes of ERP implementation projects and to assess effectiveness of the project management and challenges faced in project implementation of ERP-System at Commercial Bank of Ethiopia.

1.5.2 Specific objectives

- To assess effectiveness of the project management practice in implementation of the ERP-system at CBE
- To identify causes of the ERP project implementation delay at CBE
- To assess the challenges faced during implementation of the ERP system

1.6 Definition of Terms

- ***Effective project management***: - though there is no a single definition of the term effective project management, Kerzner (2009) states that an effective project management requires an understanding of Qualitative tools & techniques, Organizational structures and Organizational behaviour.

- ***Enterprise Resource Planning (ERP)*:-** are core software used by companies to coordinate information in every area of the business and which helps to manage companywide business processes, using a common database and shared management reporting tools (Monk & Wagner 2009).
- ***Project Success*: -** is simply defined as the completion of an activity within the constraints of time, cost and performance (Kerzner 2009).

1.7 Significance of the Study

Due to globalization and the need for better information integration, the ERP market has grown very quickly and it has drawn increasing attention because it supports business processes and functions by managing the entire organisation's resources efficiently and effectively (Dahlen & Elfsson 1999; Hwang 2011). This integrated information system has also been implemented in Ethiopia in different governmental as well as private organizations such as Ethio-telecom & Mesfin Industrial PLC (Sinamo & Marx 2012; Maschal 2017). However, according to a recent study by Panorama (2018), 64% of respondents implementing the ERP system reported being over budget while 79% of them reported that their projects exceeded their initial timelines.

Accordingly, this study has a practical significance for organizations and project managers planning to implement the ERP system successfully by increasing their general understanding with issues related to the practical implementation of the ERP system. Moreover, this study has a practical significance for decision makers of CBE as it tries to identify the causes of the ERP project delay and suggests a way of handing the problem at hand. Furthermore, the lesson learned from the previous implementation of the ERP modules helps the bank to implement the remaining tasks of the ERP- system with better efficiency.

1.8 Scope of the Study

The key concern of this study is to identify the causes of the ERP project delay at Commercial Bank of Ethiopia and to assess effectiveness of the project management in the project team. Accordingly, generalization of the study findings shall not be administered as this research focuses only on the case of ERP project implementation at CBE.

1.9 Organization of the Paper

The study is organised into five chapters. The first chapter introduces the whole study by stating the background of the study, statement of the problem, research questions, and objectives of the study and the significance of the study. The second chapter which is literature review shows the argument behind the basis of the research questions through the theoretical as well as empirical reviews of relevant studies. In the third chapter, the research design and the methodology used in this study are presented with as much detail as possible. The fourth chapter presents the collected data, analysis and results with respect to the research questions of the study. Finally, in chapter five, the conclusions drawn from the findings and result of the study are presented.

1.10 Limitation of the Study

Findings of this research are based on a single case study. Accordingly, the findings shall not be generalized from just this research. Moreover, due to the constraints of time, findings of this study are based on the respondent's observation and their reply to the prepared questionnaires and interview questions. However, findings of this research can be used as a basis for further in-depth research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definition of terms

2.1.1 Enterprise Resource Planning (ERP)

Enterprise resource planning systems or enterprise systems are software systems for business management, encompassing modules supporting functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transportation and e-business. The architecture of the software facilitates transparent integration of modules, providing flow of information between all functions within the enterprise in a consistently visible manner. (Hossain, Patrick & Rashid 2002)

From an overall business standpoint, an ERP system achieves a number of important objectives, including maximizing throughput of information, minimizing response time to customers and suppliers, pushing decision making down to the lowest appropriate level, and providing timely information to decision makers (Sumner 2014).

2.1.2 Project

According to the definition of Vargas (2008), ‘a project is a non-repetitive enterprise, characterized by a clear and logical sequence of events, with a beginning, middle, and end, focused on the accomplishment of a clear and defined objective on deadline, with costs, resources, and quality parameters specified.’

The purpose of a project is to achieve beneficial change to an organization through the implementation of business change. And in order to meet the specified requirements of an organization, projects have an allocated budget for their financial expenditures in which the deliverables are to be produced within a clearly specified start and end dates. Every project taken is different from the last one as they do not involve identical processes. Accordingly, due to uniqueness of projects and their budget and time constraints, projects entail a level of uncertainty and therefore involve an element of risk. (Westland 2006)

2.1.3 Project Management

'Project management is a scientific way of planning, implementing, monitoring and controlling the various aspects of a project such as time, money, materials and other resources with the intention of achieving the basic objectives or goals while formulating a project (Mishra & Soota 2005). It can also be defined as the skills, tools and management processes required to undertake a project successfully (Westland 2006).

According to Vargas (2003) project management has many benefits and to mention a few,

- By anticipating problematic situations that may be found, it takes preventive and corrective actions before such situations become actual issues
- It makes the budget available before the expenditures start
- It speeds up decisions, as the information is available and structured
- It increases management control on all phases to be implemented
- It enhances adaptation capabilities of the project which arises from changes in the market or in the competitive environment
- It optimizes the allocation of necessary people, capital equipment, and material

2.1.4 Challenges and opportunities

Oxford dictionary defines the word challenge as a demanding task or situation and the word opportunity as a favourable time or situation for doing something. Accordingly, challenges and opportunities of a project can be understood as the demanding tasks or situations that could cause difficulty in implementation of projects successfully and those favourable conditions that contributed to successful implementation of a project.

2.1.5 Project Delay

According to Trauner et al. (n.d), delay can be defined as to make something happen later than expected; or to cause something to be performed later than planned; or to not act timely.

2.2 ERP Project Delay Causes

Enterprise Resource Planning (ERP) systems are core software used by companies to coordinate information in every area of the business like Logistics, Production, Finance, Accounting and Human Resources (Monk & Wagner 2009). The implementation of this system is a difficult and high cost proposition that places tremendous demands on corporate time and resources (Thembalath & Mathew 2016). However, literatures show a high rate of project delay and cost overrun. According to the survey of Panorama (2018), 79% of respondents implementing the ERP system reported that their projects exceeded their initial timelines. The respondents attributed the causes of delay to the following factors.

- Organisational issues
- Unrealistic project timeline
- Expanded project scope
- Vendor did not deliver on a timely manner
- Technical issues
- Resource constraints
- Data issues
- Priority issues &
- Training issues

Similarly, according to Sumner (2014), there are a number of risk factors associated with ERP project implementation which are,

- Failure to re-design business processes
- Failure to follow an enterprise-wide design which
- Insufficient training and re-skilling
- Insufficient internal expertise
- Lack of business analysts with business and technology knowledge
- Failure to effectively mix internal and external expertise
- Lack of ability to recruit and retain qualified ERP systems developers
- Lack of senior management support
- Lack of proper management control structure
- Lack of a champion

- Ineffective communications
- Failure to adhere to standardized specification which the software supports
- Lack of integration
- Insufficient training of end-users
- Ineffective communications
- Lack of full-time commitment of customers to project management and project activities
- Lack of sensitivity to user resistance
- Failure to emphasize reporting
- Inability to avoid technological bottlenecks
- Attempting to build bridges to legacy applications

2.2.1 Unrealistic Project timeline

According to McGevna (2012), many projects are planned with an optimistic schedule resulting low probability of meeting the end dates with an acceptable quality of the product. The author explains that unrealistic schedules are chronic problems and he clarifies the reasons why as:

- pressure to meet dates forces team members to take shortcuts and shortcuts result in defects
- finding and fixing the defects pushes out the end date
- resource availability is delayed, delaying the start of the next project a more pressure is put on the project team of the next project
- customers find defects in the delivered product
- team members must multi-task fixing customer defects on delivered products while working on the current project etc.

Boehm (cited in Goff 2007) also explained that, unrealistic project timeline results in longer project duration than desired, 42% higher cost, lower quality and frustrated and dissatisfied team members.

2.2.2 Failure to re-design business processes

Any software package must fit with the organizational goals of a company. And if a misfit is found between the software package and organizational needs, companies should customize the software or implement a business process re-design. Thus, in implementation of an ERP system, the business process of the organization should be complementary to the system. Accordingly,

companies should examine their existing business process during the initial phase of the ERP implementation. Furthermore, there is found to be a significant relationship between business process change and successful implementation of ERP system. It is found that companies that consider business process change have better implementation performance than companies that do not. (Tsai et al. 2010)

Similarly, Vuksic and Spremic (2005) argued that, if a new ERP system implementation is not accompanied by a change in organizational regulations, the system will not bring the expected benefits. The authors also stated that, the implementation of the ERP systems must be accompanied by a thorough business re-engineering project to get intensive flow of information among different business functions and processes.

2.2.3 Expanded project scope

A project scope deals with the required work to create the project deliverables. Moreover, the scope of a project is specific to the work required to complete the project objectives. Many projects do not achieve much success because of lack of a clear definition for the project and product scope as well as improper control of them. (Mirza, Pourzolfaghar & Shahnazari 2013) Moreover, according to the study of Madhuri and V (n.d), as scope of a project increases, the time required to complete the project also increases.

2.2.4 Resource Constraints

Schedule of many project are developed without considering the availability of the required resources resulting to schedules that are impossible to achieve. This is with the assumption that these resources are unlimited. However, in most situations, resources are limited or constrained in some way. In addition to the basic limitation of resources, when interdependencies between resources occur, the management of resources can become very complicated. (Just, CCE and Murphy, 1994)

According to Habibi, Barzinpour and Sadjadi (2018), one of the major limitations of project scheduling is resource constraints, which is considered as a standard problem for project scheduling. And if the duration of an activity in the critical path of a project takes longer to perform than its estimated duration, due to resource constraints, the project completion time will also be delayed (Just, CCE and Murphy, 1994).

2.2.5 Data Issues

Data quality issues have to be thoroughly understood by organizations that are implementing an ERP system. Even though quality of data is critical to success of an organization, not many of have taken actions to deal with these issues. In particular, when organizations are implementing an ERP system, data quality issues have to be considered with a high priority. (Xu et al. 2002)

According to Xu et al. (2002), the commonly identified data quality issues are

- accuracy
- timeliness
- completeness and
- consistency

According the authors, DQ checks have to be conducted before moving data into the ERP system. Moreover, they argued that, DQ controls, such as internal controls, input controls, performance reviews and segregation of duties should be emphasized when implementing an ERP system.

2.2.6 Expertise related problems

Nowadays, the relevance of expertise for both collective and individual decision-making is recognized widely. Even though the meaning of expertise are only vaguely defined, experts can be understood as people who have deep, specialized knowledge of a subject, who are tested and trained, especially by experience. (Huber, n.d)

According to Sumner (2014) and Thangamani (2018), one of the risk factors associated with ERP system implementation is lack of internal expertise both in internal processes and technology. According to the study of Pedersen, Soo and Devinney (2002) internal source of knowledge appears to be extremely important to performance. Moreover, Grant (1996) argues that, to be successful, an organization should integrate the special knowledge resident in individuals into services.

2.2.7 Insufficient training and re-skilling

Training refers to bridging the gap between the current performance and the standard desired performance. Some of the benefits received form training are, increased job satisfaction, increased motivation and increased efficiencies. (Elnaga and Imran, 2013)

According to Anderson (2011), projects that met most or all of their objectives provided each team members with 40% more training than projects that failed or only partly succeeded. The author also states that, to ensure high performance of team members, a robust training program must be maintained to ensure;

- teams know how to use the deployed technology
- teams thoroughly understood and adhered to new procedures &
- new team members have sufficient skills to perform their assigned tasks.

2.2.8 Lack of Champion

According to Pinto & Slevin (1989), a champion is a person within an organization who uses power entrepreneurially to enhance project success and is a significant factor in success of many projects. The authors stated in their study that both empirical research and anecdotal evidence have supported the importance of the champion for successful implementation of projects.

2.2.9 Priority Issues

It is not easy to choose priority issues among many urgent problems as it involves analysis of a multi-step process. To choose priorities, it is required to look at the causes and impact of problems as well as analyzing solutions. For problem analysis and prioritization, different tools like priority group analysis, problem identification and prioritization, problem tree analysis, checklist for choosing an issue, etc will be required. (Veneklasen 2007)

2.2.10 Vendors did not deliver on a timely manner

According to the study of Kafile and Fore (2018), late deliveries from suppliers are one of the main sources of delays. Even though the specific causes of the late deliveries are endless, the authors recommended four ways to eliminate late deliveries which are;

- Robust vendor management
- Strong communication
- Strong internal processes &

- To be proactive

2.2.11 Ineffective communication

Project managers spend more than 90% of their time communicating with their team members and other project stakeholders. Accordingly, unless the project manager communicates with stakeholders effectively and efficiently, the ineffective communication may impose a negative impact on the project. (Project Management Institute, 2012)

Naqvi, Aziz and Rehman (2011) recommend that, based upon the findings of their study on IT projects, a project manager must consider management of stakeholder communication as one of the primary tools for manipulating the project's scope, time, cost and other knowledge areas of the project management.

2.2.12 Lack of proper management control structure

A management control structure is a logical integration of techniques, to gather and use information to make planning and control decisions, to motivate employee behaviour, and to evaluate performance (Punitha et al. n.d). Project control guides the project plan to completion and over optimistic reporting may lead to a false sense of achievement. (Burke 2003)

According to Punitha et al. (n.d), purposes of a management control system are:

- To clearly communicate the organization's goals;
- To ensure that managers and employees understand the specific actions required of them to achieve organizational goals;
- To communicate results of actions across the organization; and
- To ensure that managers can adjust to changes in the environment.

Project control guides the project plan to completion and over optimistic reporting may lead to a false sense of achievement.

2.2.13 Failure to adhere to standardized specification which the software supports

Home grown software implementation normally involves tailoring of the software to business needs whereas in the case of ERP system software, the business processes need to change to conform to the best practices modelled in the software. And this reengineering process affects the people and process in a profound way. (Hughes cited in Appuswamy 2000)

2.2.14 Lack of senior management support

To effectively deal with proper resource commitment and interface groups, senior management support is an absolute necessity. Moreover, when the senior management support and commitment is unclear, it creates an uneasy feeling among team members which in turn results low levels of project commitment and interest. Accordingly, maintaining the continued interest and commitment of senior management in the project is a major goal for project leaders. Similarly, for a project to function properly, it is critical for the senior management to provide the proper environment. (Kerzner 2009)

2.2.15 Lack of integration

Integration makes sure that all project elements are adequately integrated so that there is a guarantee that the whole is always benefited (Vargas 2008). Integration management involves making choices about resource allocation, making trade-offs among competing objectives and alternatives, and managing the interdependencies among the project management knowledge areas (Project Management Institute 2013).

2.3 Project Management Success and Project Success

Project management success is not the same as project success. Project Management Success answers the question 'Was the project done right?' while Project Success answers the question 'was the right project done?'(Demir 2008). It is also important to make the distinction between project success (which cannot be measured until after the project is completed) and project performance (which can be measured during the life of the project). No system of project metrics is complete without both sets of measures (performance and success) and a means of linking them so as to assess the accuracy with which performance predicts success (Cooke-Davies 2002).

Success is generally defined as meeting expectations of the internal or external customer by getting the job done within the constraints of time, budget and quality. In order to improve project results, leading organizations have been embracing project management and executive managers have discovered that sticking to project management methods and strategies reduced risks, cut costs and improved success rates (Project Management Institute 2010).

However, many projects are practically completed with trade-offs or with scope change of time, cost and quality. This implies that success could still occur without hitting this point of

convergence (Kerzner 2009). And according to (Mishra & Soota 2005), the following factors influence project success.

- Support of top management
- Competent project manager
- Competent team members
- Sufficient project resources
- Client involvement in defining needs and requirement
- Adequate communication channels
- Involvement of all parties in project review and corrections
- Consulting with users and keeping them informed
- Technology being implemented has been reviewed and critiqued and works well
- Clients understand the usefulness of the project
- Control measures to keep project on track
- Daily trouble shooting and resolution of problems

2.4 Effective Project Management

Project management indicates the application of knowledge, processes, skills, tools and techniques that can have a significant impact on project success (Project Management Institute 2013). Accordingly, effective project management is one of the key factors of project success (Kerzner 2009). However, it has to be noted that the scientific tools and techniques which support in the process of project management are not sufficient for its effective completion without the input from the human side. The scientific techniques will only tell what is right and what needs to be done, but it will require additional knowledge as to how it should be done and get it done through people through practical experience and human wisdom (Mishra & Soota 2005).

2.5 Project Management for Successful ERP Implementation

According to the study of (Wong and Scarbrough 2014), the three common factors that could lead to failure of ERP projects are poor consultant effectiveness, poor project management effectiveness and poor quality of BPR. Similarly, it was identified by other researchers that management support of the project team, a project team with the appropriate balance of

technical/business skills, and commitment to change by all the stakeholders were important for successful ERP implementation (Sumner 2014).

2.6 Measurement of Project Management Effectiveness

When effectiveness of activities and entities in a project are measured, we can also come up with the effectiveness of project management using a measurement function (Demir 2008). As described in the previous section, if a project management requires application of the knowledge, processes, skills, tools and techniques, in order to be effective the project team has to be familiar with the expected project management knowledge. In most cases, failure to adopt such skills in whatever phase of the project may cause inefficiency either at that level or to the overall outcome of the project (Kayalo & Muturi 2015).Project Management Institute (2013) provided the standard for project management of a project. The standard describes the nature of project management processes in terms of the integration between the processes, their interactions, and the purposes they serve. And according to Project Management Institute (2013), project management processes are grouped into five categories known as Project Management Process Groups.

- Initiating process group
- Planning process group
- Executing process group
- Monitoring and controlling process group &
- Closing process group

The Process Groups are seldom either discrete or one-time events; they are overlapping activities that occur throughout the project. Similarly, Project Management Institute (2013) identified knowledge areas of the project management process groups as,

- Project Integration Management
- Project Scope Management
- Project Time Management
- Project Cost Management
- Project Quality Management
- Project Human Resource Management
- Project Communications Management

- Project Risk Management
- Project Procurement Management
- Project Stakeholder Management

Evaluating, monitoring, and improving the effectiveness of project management can contribute to successful project implementation (Demir 2008). For effective ERP project management implementation, companies should have good project management skills, ERP knowledge and capability (Wong and Scarbrough 2014). Demir (2008) used a simple framework which accommodates the core areas of project management to measure effectiveness of project management. The framework consists of four main area of project management

1. **People:** The people main area includes seven project management areas. They are communication, teamwork, leadership, organizational commitment, project manager, stakeholder involvement, staffing and hiring.
2. **Process:** The process main area includes four project management areas. They are requirements management, project monitoring and control, project planning and estimation, and scope management.
3. **Product:** The product main area includes two project management areas. They are configuration management and quality engineering.
4. **Risk:** There are two project management areas listed under the main area of risk. They are risk assessment and risk control.

2.6.1 Communication

As communication is one of the biggest reasons for project success or failure, effective communication within the project team is highly essential. Effective project communication helps in ensuring the right information is passed to the right person. And the internal and external forces that control the communication environment can either assist or restrict the attainment of the project objectives. (Project Management Institute, 2013; Kerzner, 2009)

A project manager may spend 90 percent or more of his or her time communicating with the project stakeholders. Thus, the process of communication management must most definitely be the responsibility of the project manager. As a result, project managers should identify the different types of communication channels, understand what information they need to provide and receive, and should identify which interpersonal skills will help them communicate

effectively with the different stakeholders of the project. Moreover, a successful manager must be willing to listen to story of an individual without interruptions and see the problems from the perspectives of the individual. (Project Management Institute 2013; Kerzner 2009)

2.6.2 Teamwork

The success of a project highly depends on the teamwork (Mishra and Soota 2005). And a good teamwork results form a good leadership and a good team building (Project Management Institute 2013). Team building involves the skills required to identify, commit and integrate the various task groups form the functional organization into the project management system (Kerzner 2009).

According to Kerzner (2009), to be effective, the project manager must provide an atmosphere conducive to teamwork which involves

- The necessary expertise
- The necessary resources
- Open communication among team members and support organizations
- Involved and supportive top management & etc

Moreover, according to Mishra and Soota (2005), to achieve a real team spirit, there should be absence of

- fear and mistrust
- communication barriers
- secrecy and competitive feeling &
- individualism and isolation.

2.6.3 Leadership

In leadership, focusing on efforts of a group of people to enable them to work as a team and guiding them to a common goal is required. Leadership is necessary through all phases of the project cycle and strong leadership skills are important for success of projects. (Project Management Institute 2013) These leadership skills involve the ability to integrate individual demands, requirements and limitations into decisions and to resolve intergroup conflicts (Kerzner 2009).

For effective leadership, according to the Situational Leadership Model, matching the most appropriate leadership style to the readiness of the followers is required. And readiness of the followers depends on their job- related experience, their willingness to accept responsibility of the job and their desire to achieve it. Accordingly, to be successful in leadership, the style a leader uses must change according to the situation. (Kerzner 2009)

2.6.4 Organizational Commitment

Support of the senior management helps to effectively deal with interface groups and proper resource commitment (Kerzner 2009). However, commitment of the management without a motivated workforce is not useful ((Mishra and Soota 2005). Commitment of a project team is directly related to their level of motivation and this motivation involves creating an environment to meet project objectives while providing maximum satisfaction related to what people value most (Project Management Institute, 2013).

2.6.5 Project Manager

The project manager is responsible for ensuring that the project produces the required deliverables on time, within budget and to the level of the expected quality (Westland, 2006). However, even if the manager is responsible for the job to be performed, he/she often has no direct or formal authority over most of the people who perform the job (Mishra and Soota 2005). Accordingly, this lack of authority can force them to negotiate with upper level management as well as functional managers for control of resources. As a result, the project manger must have strong communicative and interpersonal skills, must be familiar with the operations of each line organization, and must have knowledge of the technology used. (Kerzner 2009)

2.6.6 Requirement Management

Success of a project is affected by the detection and breakdown of the project's needs into requirements and by the care taken in determining, documenting and managing the requirements of the result of the project. These requirements include conditions that are to be met by the results of a project to satisfy formally imposed specifications. Moreover, the requirements could be business requirements, stakeholder requirements, solution requirements, transition requirements, project requirements and quality requirements. (Project Management Institute 2013).

2.6.7 Project Monitoring and Control

Monitoring and control is done parallel to the project planning and execution in order to track and detect any abnormalities so that preventive and corrective actions are taken in the least time possible (Vargas 2008). The main benefit of monitoring and control is to measure the performance of a project and analyze it at regular intervals, appropriate events or exception conditions so that changes from the project management plan are identified (Project Management Institute 2013). Accordingly, monitoring and control involves;

- tracking progress
- comparing actual outcome to predicted outcome
- analyzing variance and impacts &
- making adjustments (Kerzner 2009).

2.6.8 Project Planning and Estimation

As a primary function of management, planning involves deciding the future course of action in advance (Mishra and Soota 2005). According to Kerzner (2009), there are four reasons for project planning:

- to eliminate or reduce uncertainty
- to improve efficiency of the operation
- to obtain a better understanding of the objectives and
- to provide a basis for monitoring and controlling work

The most important document created during the project planning phase is the project plan. The project plan lists the activities, tasks and resources required to complete the project. The project planning phase includes preparation of the project plan, resource plan, financial plan, quality plan, risk plan, acceptance plan, communications plan and procurement plan. (Westland 2006)

2.6.9 Scope Management

Project scope management involves the processes required to ensure that the project includes all the work required and only the work required to complete the project successfully (Project Management Institute 2013). Thus, the key purpose of scope management is to ensure the required project results are obtained by the least quantity of work possible by defining and

controlling the works to be performed by the project (Vargas 2008). The scope management process includes;

- Scope planning
- Collect requirement
- Scope definition
- WBS creation
- Scope validation &
- Scope control (Project Management Institute 2013)

2.6.10 Risk Assessment

Risk assessment involves the process of assessing risks, combining their probability of occurrence and impact, and prioritizing them for further analysis. The main objective of risk analysis is to enable project managers reduce uncertainties and focus on high-priority risks. Effective risk assessment requires clear identification and management of the risk approaches of key participants. (Project Management Institute 2013)

Any member of a project team should be allowed to raise a project-related risk at first to initiate a risk management process. All raised risks should be reviewed and determined whether each of the identified risk is applicable to the project. And for valid risks, organizations should determine which combinations of probability and impact results in a classification of high risk, moderate risk and low risk and those risks which are labelled as high risk may require priority action and aggressive response strategies.(Westland, 2006; Project Management Institute 2013)

2.6.11 Risk Control

The main benefit of the process of risk control is to improve the efficiency of the risk approach throughout the project life cycle to optimize risk responses. The process of risk control involves,

- implementing risk response plans
- tracking identified risks
- monitoring residual risks
- identifying new risks and
- evaluating risks process effectiveness throughout the project. (Project Management Institute 2013)

2.7 Conceptual Framework

Delay causes of the ERP implementation project

From the literature review, 18 variables are identified which are found by different researchers to be commonly occurring problems and risk factors that prevent attainment of the planned schedules of ERP implementation projects. In order to see the delay factors from the perspective of project management, the 18 variables can be categorized into 6 of the project management knowledge areas as explained below.

Project human resource management factors

Human resource planning is used to determine and identify human resources with the necessary skill required for project success. The human resource management plan describes how the roles and responsibilities, reporting relationships and staffing management will be addressed and structured within a project. Moreover, the human resource management plan contains identification of training needs. (Project Management Institute 2013)

According to the above explanation of project human resource management, the identified delay factors of the ERP project implementation organized under this group are insufficient training, insufficient internal expertise, lack of business analyst with business and technology knowledge, failure to effectively mix internal and external expertise & lack of project management control structure.

Project quality management factors

Project quality management works to ensure that the project requirements including product requirements are met and validated. Failure to meet the quality requirements can lead to increased errors and rework. (Project Management Institute 2013)

As a result, as the business processes of the organization have to be re-designed, failure to do so with the expected level of quality will result to rework and affect the project schedule ultimately. Similarly, inability to avoid technological bottlenecks, failure to adhere to standardized specification which the software supports and data quality issues would affect the quality of the project requirements which ultimately increases errors and rework.

Project integration management factors

Project integration management includes making choices about resource allocation, making trade-offs among competing objectives and alternatives and managing the interdependencies among the project management knowledge areas. (Project Management Institute 2013)

Accordingly, prioritizing among competing objectives, allocating the required resources for the project and integrating the different works which are being performed in the project are required to complete a project successfully.

Project communication management factors

Effective communication creates a bridge between diverse stakeholders who may have different cultural and organizational backgrounds, different level of expertise and different perspectives and interests, which may impact or have an influence upon the project execution or outcome. (Project Management Institute 2013)

Westland (2006) states that clear, accurate and timely communication is critical to the success of any project as miscommunication can result in increased project risk. Moreover, the author argues that clear project communication ensures that the correct stakeholders have the right information, at the right time, with which to make well informed decisions. Moreover, according to Vargas (2008) motivating and providing executive support & building a collaborative and integrated environment are among the objectives of communication events.

As a result, in addition to the identified delay factor ineffective communications, lack of a champion and lack of senior management support are grouped under this category. However, the reason for lack of senior management support and lack of a champion could also be attributed to other additional causes other than communication problems.

Project time management factors

Project Time Management includes the processes required to manage the timely completion of the project. (Project Management Institute 2013)

Project time management is performed in the planning process group as well as in the monitoring and controlling process group. Accordingly, planning unrealistic project timeline and not

monitoring the timely delivery of the ERP system vendor are under the management of the project time.

Project scope management factors

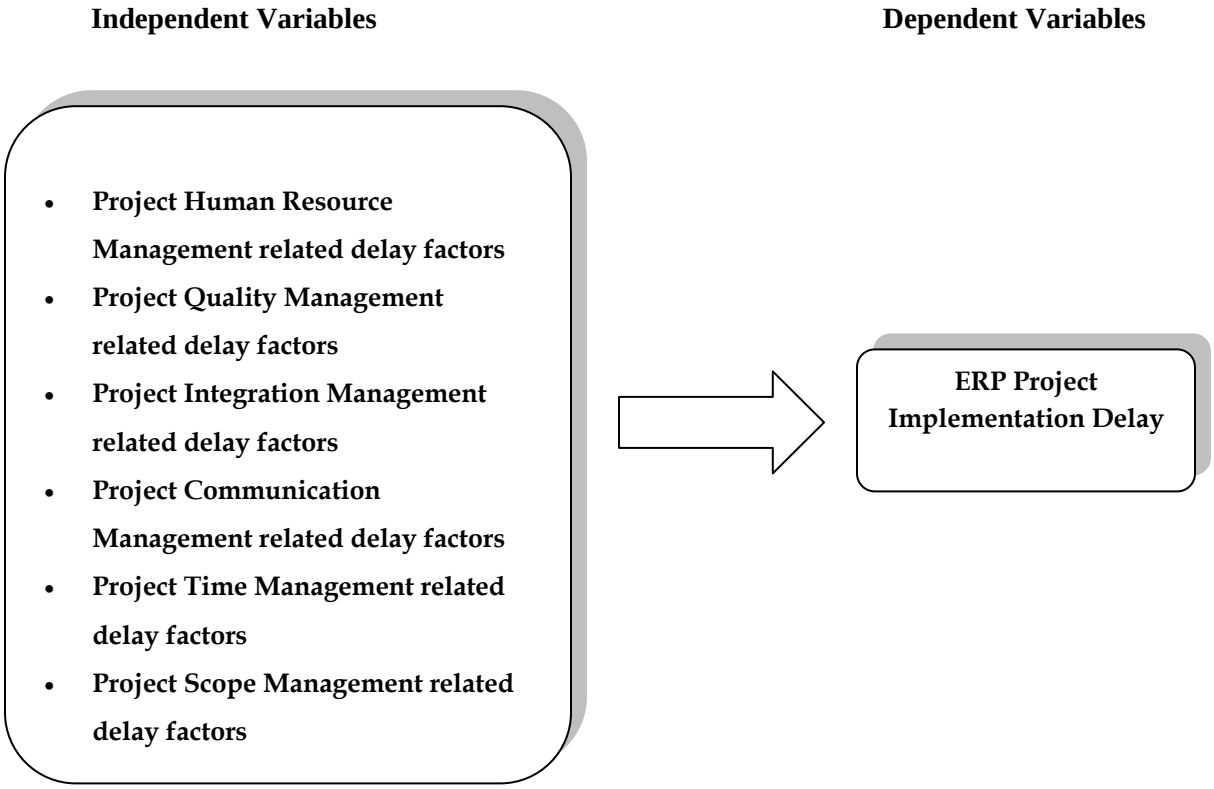
Project scope management includes processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Moreover, the key benefit of this process is that it provides guidance and direction on how scope will be managed throughout the project. (Project Management Institute 2013)

Accordingly, under the process group of monitoring and controlling, the objective of the project scope management is to control the scope.

Effectiveness of the project management in the ERP implementation project

To analyse effectiveness of the project management in the ERP implementation project at CBE, the framework developed by Demir (2008) can be adopted. Accordingly, the three main areas of the project management can be taken to assess effectiveness of the project management from the perspective of people, process and risk.

Figure 1. Conceptual framework



Source: Own model, 2019

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

In this chapter the type of the research is specified and summary of the type of procedures that will be conducted in data collection and analysis are provided.

3.2 Research Approach

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. Qualitative research, on the other hand, is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind (Kothari 2004). Accordingly, in this study both qualitative and quantitative research approaches are used.

3.3 Research Design

Descriptive research attempts to examine situations in order to establish what is the norm, so that what could happen under the same circumstances can be predicted (Walliman 2011). This study seeks to answer causes of the ERP project delay, evaluate effectiveness of the project management practice and to find out the challenges the project team faces during the implementation phase of the project. Accordingly, the research is evaluative and tries to examine the situation which makes it under the category of the Descriptive research design.

3.4 Sampling Design

3.4.1 Target population

The implementation of the ERP system at CBE is being carried out through the organization of a project office. A project team with a total number of 104 project team members including the project manager was formed. However, as all of the agreed up on modules are set to go-live and as the project is at its production phase, currently the project office is operating with 25 project team members for implementation of the remaining tasks. Accordingly, the target population includes all of the current team members and the available previous team members of the project.

3.5 Data Collection Methodology

Primary as well as secondary sources of data are used for this study. Primary data are collected from respondents through interviews and questioners and the secondary data are collected from other research papers and newspapers.

3.6 Data Collection Instrument

As a method of data collection, the questionnaire is a very flexible tool that has the advantages of having a structured format, is easy and convenient for respondents, and is cheap and quick to administer to a large number of cases (Walliman 2011). As a result, questionnaires and interviews are used in this study as it can help gather valid and reliable data that are relevant to the research questions and objectives (Saunders, lewis &Thornhill 2009). Accordingly, a structured interview guides and questionnaires with Likert scale are used for collection of the data. Moreover, standard questionnaires adopted from Demir (2008) are used for measurement of the project management effectiveness.

3.7 Data Analysis Method

There are distinct differences in how to deal with quantitative and qualitative data. Statistics is the science by which quantitative data is most easily analyzed, and there is a vast array of tests that can be applied according to the nature of the data. On the other hand, the analysis of qualitative data has not been developed into such an exact science, primarily due to the more imprecise nature of the data (Walliman 2011).

For analysis of the delay cause of the project implementation, percentage composition, Relative Importance Index, Mean and Standard deviation are used. The same is also used for analysis of the data collected to assess effectiveness of the project management except for the Relative importance index.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the collected data through questionnaires and interviews with the appropriate analysis and discussion.

4.2 Data collection

For the implementation of the ERP system at CBE, a project team with a total number of 104 project team members including the project manager was formed. However, as all of the agreed up on modules are set to go-live and as the project is at its production phase, currently the project office is operating with 25 project team members for implementation of the remaining tasks. Accordingly, in addition to the current project team members, questionnaires were distributed to the previous project team members available. Consequently, a total of 37 questionnaires were distributed and 33 of them were collected. Among the collected 33 questionnaires, 23 of them are from the current project team members while the rest 10 are from the previous members of the project team. However, during screening of the questionnaires, 3 of them are excluded from the analysis as they were not appropriately filled.

4.3 Respondents Demographic Information

Table 1.Demographic characteristics of the respondents

	Number of respondents	**Percentage**
Gender		
Male	22	73%
Female	8	27%
Age		
25-34	24	80%
34-45	6	20%
Educational Level		
Degree	28	93%
Masters	2	7%
Position in the organization		

Junior Officer	4	13%
Officer	18	60%
Sr. officer	6	20%
Team manager	2	7%
Experience in the organization		
Below 5 years	18	60%
6-10 years	8	27%
11-15 years	2	7%
More than 15 years	2	7%
Experience in working on projects		
Below 1 year	8	27%
2-3 years	12	40%
4-5 years	10	33%
Project related trainings taken		
Yes	16	53%
No	14	47%

Source: Own survey

According to the responses of the project team members through the questionnaires, 27% of the respondents are female while the remaining 73% of the respondents are male. From this result, we can understand that the majority of the respondents in the project office are male.

The collected data shows that 20% of the respondents are between the age of 34 and 45 while the 80% of them are between the age of 25 and 34. Moreover, the collected data shows there are no young adults below the age of 25 and older adults over the age of 45. This shows that the respondents are old enough to understand the importance of this research and respond responsibly.

The majority 93% of the respondents are Bachelor degree holders while only 7% of them acquired a Masters degree. However, the respondents are generally educated and their responses are likely to be knowledge based which is very important for this research.

According to the collected data, 60% of the respondents have below 5 years of experience in their organization while 27%, 6% and 7% of them have experience of 6 -10 years, 11 – 15 years and more than 15 years at CBE respectively. However, even if the majority of the respondents have below 5 years of experience at CBE, the data shows that only 13% of them are Junior Officers. Moreover, according to the scale of CBE, the minimum years of experience required

for the Officer position is 3 years. This shows that the majority of the respondents have a minimum of 3 years of experience at CBE which demonstrates that the majority of them have enough background knowledge about the organization.

The collected data shows that, only 27% of the respondents have below 1 year experience in working on projects while 33% of the respondents have 4-5 years of experience in working on projects. Moreover, 40% of them have 2 – 3 year of experience in projects. On the other hand, 53% of the respondents have taken project related trainings while the remaining 47% of them did not take any project related trainings. Moreover, the collected data shows that the trainings taken by all of the respondents who took project related trainings are related the ERP system.

4.4 Delay Causes of ERP Project Implementation

To assess delay causes of the ERP project implementation, 18 variables were identified from literature review and respondents were asked through questionnaires to identify how strongly they think the identified variables contributed to the delay of the ERP project implementation at CBE. Interpretation of the mean results of the Likert scale is carried out with the assumption that all the scales ranging from 1 to 5 have equal values. Accordingly, mean results ranging from 1 to 1.8 are considered as Very highly, 1.8 to 2.6 as Highly, 2.6 to 3.4 as Mildly, 3.4 to 4.2 as Not at all and from 4.2 to 5 as No opinion. Furthermore, standard deviation less than one is considered as a general consensus among the respondents while a standard deviation more than one is considered as varying opinions among the respondents.

4.4.1 Project human resource management factors

Table 2. Analysis of project human resource management delay factors

No	Project human resource factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Insufficient training and re-skilling	14	8	6	2	0	1.87	0.97
		47%	*27%*	*20%*	*7%*	*0%*		
2	Insufficient internal expertise	18	6	4	2	0	1.67	0.96
		60%	*20%*	*13%*	*7%*	*0%*		
3	Lack of business analysts with business and technology	8	14	4	4	0	2.13	0.97

	knowledge							
		27%	*47%*	*13%*	*13%*	*0%*		
4	Failure to effectively mix internal and external expertise	4	14	8	4	0	2.40	0.89
		13%	*47%*	*27%*	*13%*	*0%*		
5	Lack of proper management control structure	4	2	15	9	0	2.97	0.96
		13%	*7%*	*50%*	*30%*	*0%*		
Average Mean and Standard Deviation							**2.21**	**0.95**

Source: Own survey, 2019

According to the analysis of responses, most of the ERP project team members agree the project human resource management highly contributed for the project implementation delay with an average mean value of 2.21 (~highly contributing factor to delay) and standard deviation of 0.95.

According to the collected data, 47% of the respondents believe that insufficient training contributed to the ERP project implementation delay very highly while 27% of them believe it contributes highly. With a mean result of 1.87 and standard deviation of 0.97, insufficient training and re-skilling is believed among the respondents to be among the highly contributing factors of the ERP project implementation delay at CBE. Similarly, 60% of respondents believe that insufficient internal expertise contributes very highly to delay of the project implementation while 20% of them believe it contributes highly. The mean of the results, which is 1.67, shows that the level of contribution of insufficient internal expertise to the project delay is very highly with a standard deviation of less than 1.

A mean value of 2.13 shows that lack of business analyst with business and technology knowledge is also a highly contributing factor of the project implementation delay with a standard deviation of 0.97. 47% of the respondents believe that failure to effectively mix internal and external expertise affects the schedule overrun of the project highly. And with a standard deviation of 0.89 to the mean value of 2.4, most of the respondents agree that this factor is one of the causes of the project delay. Lack of proper management control structure is not a strong factor to cause the schedule overrun as the mean value is calculated to be 2.97 and with a standard deviation of the responses to be 0.96. Accordingly, this factor is only a mildly contributing factor of the project implementation delay.

To summarize, the majority of the respondents agree that insufficient internal expertise highly affects the schedule of the ERP project implementation negatively. Similarly, insufficient training, lack of business analyst with business and technology knowledge and failure to effectively mix internal and external expertise are believed to be highly contributing factors of the implementation delay. However, the majority of the respondents believe that lack of proper management control structure only slightly affects the time overrun of the ERP project implementation. Generally, the responses of the majority of the respondents show that, the above indicated ERP project implementation delay factors, found under the project human resource management, are among the highly contributing factors of the schedule overrun of the ERP project. Moreover, these findings correspond to the literature review which includes the study of Sumner (2014), Thangamani (2018), Pederson, Soo and Devinney (2002), Grant (1996) and Anderson (2011).

4.4.2 Project quality management factors

Table 3. Analysis of project quality management delay factors

No	Quality Management Factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Failure to re-design business processes	4	16	6	4	0	2.33	0.88
		13%	*53%*	*20%*	*13%*	*0%*		
2	Inability to avoid technological bottlenecks	4	4	22	0	0	2.60	0.72
		13%	*13%*	*73%*	*0%*	*0%*		
3	Data quality issues	14	7	8	0	1	1.90	1.03
		47%	*23%*	*27%*	*0%*	*3%*		
4	Failure to adhere to standardized specification which the software supports	0	8	18	2	2	2.93	0.78
		0%	*27%*	*60%*	*7%*	*7%*		
Average Mean and Standard Deviation							**2.44**	**0.86**

Source: Own survey, 2019

Analysis of the collected data shows that, the majority of the respondents believe the project quality management factors highly contributed to the project implementation delay of the ERP

system with an average mean value of 2.44 (~highly contributing factor to delay) and standard deviation of 0.86.

The majority 53% of the respondents believe that failure to re-design business processes is a highly contributing factor of the implementation delay. The standard deviation to the mean value of 2.33 is 0.88 which shows that most of the respondents agree on the issue. According to the results of 73% of the respondents, inability to avoid technological bottlenecks is only a mildly contributing factor to the delay. This shows that most of the respondents agree that the significance of this factor for the time overrun of the project is low.

The mean value of the responses to the question of how significantly data quality issues affect the project schedule is found to be 1.9. This result makes this delay factor to fall under the highly affecting factors of the project schedule. However, the standard deviation of 1.03 shows that there is a relatively different opinions on the issue. However, if we see the percentage composition of the results, 70% of the respondents believe this factor is at least a high contributor of the project delay.

60% of the respondents believe that failure to adhere to standardized specification which the software supports is only a slightly significant factor of the implementation delay. Moreover, the standard deviation to the mean value of 2.93 is found to be 0.78 which shows that the majority of the respondents agree on the issue.

In general, the majority of the respondents believe that failure to re-design the business process highly affected the schedule of the ERP project negatively and this finding is consistent with the study of Chen, Hwang & Hsu (2010) who explained that there is a significant relationship between business process change and successful implementation of ERP system. Moreover, there is a consensus among the respondents that inability to avoid technological bottlenecks and failure to adhere to standardized specification which the software supports contributed to the project delay only slightly. However, even if there are different opinions among respondents on the issue of data quality, the majority of the respondents believe that this factor highly affects the project schedule negatively and the study of Xu et al. (2002) also indicates that quality of data is critical to success an organization implementing an ERP system. Generally, the analysis of the

result show that, the project quality management factors highly contributed to schedule overrun of the ERP project implementation.

4.4.3 Project integration management factors

Table 4. Analysis of integration management delay factors

No	Integration management Factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Lack of integration	6	10	8	6	0	2.47	1.04
		20%	*33%*	*27%*	*20%*	*0%*		
2	Priority issues	10	4	12	4	0	2.33	1.09
		33%	*13%*	*40%*	*13%*	*0%*		
3	Resource constraints	4	4	16	6	0	2.80	0.92
		13%	*13%*	*53%*	*20%*	*0%*		
Average Mean and Standard Deviation							**2.53**	**1.02**

Source: Own survey, 2019

Even if the majority of the respondents believe that the project integration management factors highly affected the schedule overrun of the ERP project implementation with an average mean value of 2.53 (~highly contributing factor to delay), it is found out that there is a varying opinion among them with a standard deviation of 1.02.

The standard deviation of the ERP project implementation delay causing factor, lack of integration, is 1.04 to the mean value of 2.47. The mean value gravitate towards the highly contributing factors while the standard deviation shows that there are somehow different opinions on the matter. Priority issues are also found to be under the category of the highly contributing factors even if the standard deviation of 1.09 shows that the responses among the respondents are varying.

53% of the respondents believe that resource constraints affected the schedule of the project slightly. The standard deviation of 0.92 to the mean value of 2.8 also shows that the majority of the respondents agree on the issue. The mean average of 2.53 and standard deviation of 1.02 of the factors under the project integration management shows that, most of these factors are only

slightly contributing factors of the delay. However, the respondents have varying opinions on the issue.

Among the project integration management delay factors indicated above, lack of integration and priority issues are believed by many of the respondents to be a highly contributing factors of the ERP project implementation delay at CBE. However, it can be said that the respondents have different opinions about the issue. On the other hand, there is a consensus among most of the respondents that resource constraints are only slightly contributing factors of the project implementation delay.

4.4.4 Project communication management factors

Table 5. Analysis of project communication management delay factors

No	Communication management Factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Ineffective communications	6	8	12	4	0	2.47	0.97
		20%	*27%*	*40%*	*13%*	*0%*		
2	Lack of a champion	4	6	14	6	0	2.73	0.94
		13%	*20%*	*47%*	*20%*	*0%*		
3	Lack of senior management support	0	4	8	16	2	3.53	0.82
		0%	*13%*	*27%*	*53%*	*7%*		
Average Mean and Standard Deviation							**2.91**	**0.91**

Source: Own survey, 2019

With an average mean value of 2.91 (~mildly contributing factor to delay) and standard deviation of 0.91 the impact of project communication management factors on the ERP project implementation delay is found to be low according to the responses of the ERP project team members who participated in this research.

The mean value of the responses to the question of how significantly ineffective communications affect the schedule overrun of the project is found to be 2.47. This value shows that this factor contributed to the delay of the project implementation highly. When we look at the value of the standard deviation, which is 0.97, it shows that most of the respondents believe this delay factor is a highly contributing factor of the schedule overrun.

On the other hand, when we look at the result of the delay factors lack of champion and lack of senior management support, their means values are calculated to be 2.73 and 3.53 respectively. This shows that lack of a champion has a low impact on the delay of the project while lack of senior management support is believed to have no contribution for the project implementation delay. Moreover, the values of the standard deviations show that there is a good agreement among the respondents on the matter.

The mean average of 2.91 and standard deviation of 0.91 of the factors under the project communication management shows that, most of these factors are only slightly contributing factors of the delay. Moreover, most of the respondents agree on the issue.

Generally, from the perception of the majority of the respondents, lack of senior management support is believed to have no contribution to the project implementation delay at CBE. On the other hand, most of the respondents believe that ineffective communication highly affected the schedule of the project negatively and this result is consistent with the literature review. As project managers spend more than 90% of their time communicating with their team members (Project Management Institute, 2012), project managers must use communication as their primary tool to manipulate the project scope, time and cost (Naqvi, Aziz and Rehman, 2011). Similarly, most participants of this research believe that lack of champion has a slight contribution to delay of the ERP project implementation and Pinto & Slevin (1989) have also explained that champions are important for successful implementation of projects.

4.4.5 Project time management factors

Table 6. Analysis of project time management delay factors

No	Time management Factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Unrealistic project timeline	4	18	8	0	0	2.13	0.63
		13%	*60%*	*27%*	*0%*	*0%*		
2	Vendor did not deliver on a timely manner	0	12	6	10	2	3.07	1.01
		0%	*40%*	*20%*	*33%*	*7%*		
Average Mean and Standard Deviation							**2.60**	**0.82**

Source: Own survey, 2019

The average mean value of 2.6 (~highly contributing factor to delay) and standard deviation of 0.82 for the project time management factors shows that most respondents believe these factors have a high negative impact on schedule of the project. However, when we look at the individual factors, the results show a different meaning.

According to the respondents, a mean value of 2.13 and standard deviation of 0.63 shows that unrealistic project timeline is believed to be among the highly contributing factors of the project implementation delay. However, a mean value of 3.07 shows that late delivery of the vendor is only a slightly contributing factor of the project time overrun. However, the standard deviation of 1.01 shows that there are different opinions among the respondents on the issue.

Generally, according to the consensus of the majority of the respondents, the factors under the project time management are highly contributing factors of the delay. However, we can understand from the responses that, problems with the time management issues occurred during the planning stage by planning an unrealistic project timeline. And according to the literature review, many projects are planned with an optimistic schedule which results longer project duration than desired (McGevna, 2012; Goff, 2007).

4.4.6 Project scope management factors

Table 7. Analysis of project scope management delay factors

No	Scope management factors Contributing to ERP project Delay	Scale Count and Percentage					Mean	S.D
		Very Highly	*Highly*	*Mildly*	*Not at all*	*No opinion*		
1	Expanded project scope	10	10	6	4	0	2.13	1.04
		33%	*33%*	*20%*	*13%*	*0%*		
Average Mean and Standard Deviation							**2.13**	**1.04**

Source: Own survey, 2019

According to the respondents, the mean value of 2.13 (~highly contributing factor to delay) shows that expanded project scope affects the schedule of the project negatively. However, the standard deviation of the results, which is 1.04, shows that the respondents have different perceptions on the issue. However, when we look at the percentage composition of the results, 66% of the respondents believe the factor has at least a high contribution to the delay.

To sum up, expanded project scope is believed by the most of the respondents to be a highly contributing factor of the delay. However, there is no a general consensus among them as there are others with varying opinions on the matter. On the other hand, the literature review indicates that, lack of a clear definition of the project scope and improper control over them could lead to lack of project success and scope creep increases the time required to complete a project (Mizra, Pourzolfaghar & Shahnazari, 2013; Madhuri, n.d).

4.4.7 Rank of the delay factors

To understand the level of impact of each of the individual delay factors relative to one another, a relativity importance index is used for the analysis.

Table 8. Rank of individual delay factors

	Factors Contributing to ERP project Delay at CBE	**RII**	**Rank**
1	Insufficient internal expertise	0.42	1
2	Data issues	0.47	2
3	Insufficient training and re-skilling	0.47	2
4	Unrealistic project timeline	0.53	3
5	Expanded project scope	0.53	3
6	Lack of business analysts with business and technology knowledge	0.53	3
7	Failure to re-design business processes	0.58	4
8	Priority issues	0.58	4
9	Failure to effectively mix internal and external expertise	0.60	5
10	Ineffective communications	0.62	6
11	Lack of integration	0.62	6
12	Inability to avoid technological bottlenecks	0.65	7
13	Failure to adhere to standardized specification which the software supports	0.67	8
14	Lack of a champion	0.68	9

15	Vendor did not deliver on a timely manner	0.70	10
16	Resource constraints	0.70	10
17	Lack of proper management control structure	0.74	11
18	Lack of senior management support	0.82	12

Source: Own survey, 2019

Looking at the above result, the delay factors ranked from 1 to 3 are insufficient internal expertise, data issues, insufficient training, unrealistic project time line, expanded project scope and lack of business analyst with business and technology knowledge.

The majority of the project team members who participated in this study believe that, one of the factors that contributed to delay of the ERP system implementation project at CBE is insufficient internal expertise and the frequency of this replay is ranked on number one. This result is consistent with the studies of Sumner (2014) and Thangamani (2018) who found out that one of the risk factors associated with ERP system implementation is lack of internal expertise both in internal processes and technology.

The other factors which are ranked on number two with respect to the frequency of the respondents reply are data issues and insufficient training. Xu et al. (2002) explain that even if data quality is critical to success of an organization, many of them do not take action to deal with the issue. The authors also state that, organizations who implement an ERP system have to consider data quality issues with a high priority. Similarly, Anderson (2011) explains the positive relationship between training and project success. From this, it can be understood that the findings of this study shows consistency with the literature review.

The project implementation delay factors which are ranked on number three and believed by the majority of the respondents to be highly contributing factors to the schedule overrun of the ERP system implementation are unrealistic project timeline, expanded project scope and lack of business analyst with business and technology knowledge. As can be referenced in the literature review, McGevna (2012) stated that, unrealistic schedules are chronic problems to projects and Boehm (cited in Goff 2007) explained that, unrealistic project time line results in longer project duration than desired. Moreover, as scope of a project increases, the time required to complete

the project also increases (Madhuri and V, n.d). Accordingly, results of this study are supported by other literatures.

In addition to the relative importance of the individual delay factors, understanding which project management areas contributed more to the ERP system implementation delay is helpful in order to direct the focus and guide the subsequent action required to solve the problems. Accordingly, the relative importance index of the group is used for the analysis.

Table 9. Rank of delay factors

No	Factors Contributing to ERP project Delay at CBE	RII	Rank
1	Project scope management related factor	0.53	1
2	Project human resource management related factors	0.55	2
3	Project quality management related factors	0.59	3
4	Project time management related factors	0.62	4
5	Project integration management related factors	0.63	5
6	Project communication management related factors	0.71	6

Source: Own survey, 2019

As can be seen in the above table, the project scope management related factor is ranked as number one followed by the project human resource management related factors on the second place. Similarly, project quality management related factors hold the third place followed by project time management related factors, project integration management related factors & project communication management related factors with a rank of fourth, fifth and sixth place respectively. These ranks represent what the majority of the participants attribute the ERP project implementation delay to.

4.5 Project Management Effectiveness

To measure effectiveness of the project management, respondents were questioned to respond to the three main project management areas as has been identified in the literature review. Accordingly, standard questionnaires developed by Demir (2008) were used from the aspects of People, Process and Risk. As a result, the following result is obtained from the collected data through questionnaires. Moreover, interpretation of the mean results of the Likert scale is carried out with the assumption that all the scales ranging from 1 to 5 have equal values. Accordingly, mean results ranging from 1 to 1.8 are considered as Strongly disagree, 1.8 to 2.6 as Disagree, 2.6 to 3.4 as Neutral, 3.4 to 4.2 as Agree and from 4.2 to 5 as Strongly agree. Furthermore, standard deviation less than one is considered as a general consensus among the respondents while a standard deviation more than one is considered as varying opinions among the respondents.

4.5.1 People

In people aspect of the project management, issues with related to communication, teamwork, leadership, organisational commitment & the project manager are raised and the corresponding responses are received from the respondents through the standardized questionnaires.

Table 10. Analysis of project management effectiveness from the aspect of communication

No	1. People	Scale Count and Percentage					Mean	S.D
	1.1 Communication	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***		
1.11	Communication and coordination for activities are planned in the project plan.	0	4	2	22	2	3.73	0.78
		0%	*13%*	*7%*	*73%*	*7%*		
1.12	As a project manager or a project team member, I can easily communicate my messages and I can be understood.	2	2	6	16	4	3.60	1.04

		7%	*7%*	*20%*	*53%*	*13%*		
1.13	The project environment facilitates horizontal communication that is between peers.	0 *0%*	0 *0%*	6 *20%*	20 *67%*	4 *13%*	3.93	0.58
1.14	The project status is visible to every stakeholder and project team member.	0 *0%*	6 *20%*	6 *20%*	16 *53%*	2 *7%*	3.47	0.90
1.15	The project manager, management team, and team leaders are always accessible to project team members in a timely manner.	0 *0%*	4 *13%*	4 *13%*	18 *60%*	4 *13%*	3.73	0.87
1.16	The project environment facilitates freedom in reporting of project problems.	0 *0%*	6 *20%*	6 *20%*	14 *47%*	4 *13%*	3.53	0.97
Average Mean and Standard Deviation							**3.67**	**0.86**

Source: Own survey, 2019

Responses of the research participants in the aspect of communication resulted an average mean value of 3.67(~ agree) and average standard deviation of 0.86. This result shows that most of the respondents believe that there is a good communication within the project office.

The mean value of 3.73 shows, the majority of the respondents believe communication and coordination for activities are planned in the project plan and the standard deviation of 0.78 shows that, the majority of the respondents agree on the issues. According to the collected responses, a mean value of 3.9 reveals

that, the majority of the respondents perceive they have a project environment that facilitates a good horizontal communication between peers. The standard deviation of 0.58 also shows that most of the participants of this study have similar opinions on the matter. A mean value of 3.47 and standard deviation of 0.9 indicates that most of the respondents agree that the project status is visible to every stakeholder.

Moreover, most of the respondents, with a standard deviation of 0.87 and mean value of 3.73, agree that the project manager, management team and team leaders are always accessible to project team members in a timely manner. Furthermore, a standard deviation of 0.97 to the mean value of 3.53 indicates that most of the respondents believe the project environment facilitates freedom in reporting of project problems. On the other hand, even if a mean value of 3.6 shows that most of the respondents believe they can easily communicate their messages and can be understood, the standard deviation of 1.04 shows that there are different opinions on the issue.

In general, the responses of the project team members who participated in this research shows that, the majority of them agree in that there is a good communication within the project office and according to the literature review, effective communication within the project team is highly essential for project success (Project Management Institute, 2013; Kerzner, 2009). Most of the respondents believe that there is a project environment which facilitates a horizontal communication between peers and communication and coordination for activities are planned in the project plan. Similarly, most of the respondents believe that the project manager and team leaders are always accessible to the project team in a timely manner and that the project environment facilitates freedom in reporting of project problems. However, there are varying opinions among them in that they can easily communicate their messages and can be understood.

Table 11. Analysis of project management effectiveness from the aspect of teamwork

No	**1. People**	**Scale Count and Percentage**						
	1.2 Team Work	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
1.2.1	The project is adequately staffed during the project development.	0	4	2	22	2	3.73	0.78
		0%	*13%*	*7%*	*73%*	*7%*		
1.2.2	There are regular status meetings to self-assess the project team's performance and	0	8	4	14	2	3.13	0.98

	morale.							
		0%	*27%*	*13%*	*47%*	*7%*		
1.2.3	The project environment facilitates teaming up inexperienced team members with the experienced team members.	4	2	8	14	2	3.27	1.14
		13%	*7%*	*27%*	*47%*	*7%*		
1.2.4	The project team is empowered with adequate resources to do their tasks.	0	4	8	14	4	3.60	0.89
		0%	*13%*	*27%*	*47%*	*13%*		
1.2.5	The project environment offers professional growth potential for team members.	0	0	10	16	4	3.80	0.66
		0%	*0%*	*33%*	*53%*	*13%*		
Average Mean and Standard Deviation							**3.51**	**0.89**

Source: Own survey, 2019

With regard to team work within the project team members, an average mean value of 3.51 (~ agree) and standard deviation of 0.89 shows that the majority the respondents agree there is a team work within the ERP project implementation team.

With a mean value of 3.73 the majority of the respondents believe that the project was adequately staffed during development of the ERP project and the standard deviation 0.78 shows most of them agreed on the issue. Moreover, a mean value of 3.6 and standard deviation of 0.89 indicates that the majority of project team members believed they are empowered with the adequate resources to do their tasks. However, a standard deviation of 0.98 to the mean value of

3.13 indicates that the majority of the respondents have neutral opinions whether there are regular status meetings to self-assess the project team's performance and morale.

A mean value of 3.8 and standard deviation of 0.66 indicates that, the majority of the respondents agree the project environment offers professional growth potential for the team members. However, a standard deviation value of 1.14 to the mean value 3.27 shows that there are different opinions among the team members in that the project environment facilitates teaming up of inexperienced team members with the experienced ones.

To sum up the majority of the respondents agree in that the project was adequately staffed during development of the ERP project. Most of them also agree that adequate resources are facilitated which makes them empowered to do their tasks. However, most of the respondents have neutral opinions in that there are regular meetings to self-assess the project team's performances. The majority of the participants agree that the project environment offers professional growth potential for team members. However, there are varying perceptions among them in that the environment facilitates a teaming up of experienced and inexperienced team members together. In general, the result shows that, most of the respondents believe that there is a good team work in the ERP system implementation project of CBE and according to Mishra and Soota (2005), success of a project is highly dependent on teamwork.

Table 12. Analysis of project management effectiveness from the aspect of leadership

No	**1. People**	**Scale Count and Percentage**						
	1.3 Leadership	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
1.3.1	The leaders at various levels sets example for others.	4 *13%*	2 *7%*	6 *20%*	16 *53%*	2 *7%*	3.33	1.15
1.3.2	The leaders at various levels are effective problem-solvers in technical and social issues.	2 *7%*	2 *7%*	10 *33%*	12 *40%*	4 *13%*	3.47	1.04
1.3.3	The leaders at various levels assign correct	2	6	6	12	4	3.33	1.15

	tasks to correct people.							
		7%	*20%*	*20%*	*40%*	*13%*		
1.3.4	The leaders at various levels easily delegates authority when necessary.	0	4	14	10	2	3.33	0.80
		0%	*13%*	*47%*	*33%*	*7%*		
1.3.5	The leaders at various levels welcome communication of project problems at any time.	0	2	8	16	4	3.73	0.78
		0%	*7%*	*27%*	*53%*	*13%*		
Average Mean and Standard Deviation							**3.44**	**0.99**

Source: Own survey, 2019

Response analysis of the ERP project team members who participated in this research results an average mean value of 3.44 (~ agree) and standard deviation of 0.99 with regard to leadership. This result indicates that in general the majority of the respondents agree on the matter.

A standard deviation result of 0.78 to the mean value of 3.73 shows that, there is a general consensus among the respondents in that the leaders at various levels welcome communication of project problems at any time. However a mean value of 3.47 and standard deviation of 1.04 shows that the majority of the respondents have varying opinions in that the leaders at various levels are effective problems solvers of technical and social issues.

Mean values of 3.33 and standard deviations of 1.15 indicate that there are different opinions within the project team in that the leaders at various levels set example for others and in that the leaders at various levels assign correct tasks to the correct people. However, a mean value of 3.33 and standard deviation of 0.8 indicates that the majority of the respondents have neutral opinions in that the leaders at various levels easily delegate authority when necessary.

In general, the majority of the respondents agree in that the leaders at various levels welcomes communication of project problems at any time. However, there are different opinions among the respondents in the technical and social problem-solving ability of the leaders at various levels.

Moreover, there are varying opinions among the respondents in that the leaders at various levels set example for others and in that they assign correct tasks to the correct people. However, the majority of the respondents have neutral opinions in that leaders easily delegate authority when necessary. To sum up, the majority of the respondents agree that there is a good leadership in their project team and according to Project Management Institute (2013), strong leadership skills are important for success of a project.

Table 13. Analysis of project management effectiveness from the aspect of organizational commitment

No	**1. People**	**Scale Count and Percentage**						
	1.4 Organizational Commitment	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
1.4.1	There is commitment to quality by executive management, team members and other stakeholders.	0 *0%*	0 *0%*	0 *0%*	24 *80%*	6 *20%*	4.20	0.41
1.4.2	Adequate resources are set aside for the success of the project.	0 *0%*	4 *13%*	2 *7%*	20 *67%*	4 *13%*	3.80	0.85
1.4.3	There is support for bringing in expertise when needed (Such as technical, legal, contracting etc.)	2 *7%*	2 *7%*	4 *13%*	18 *60%*	4 *13%*	3.67	1.03
1.4.4	The executive management supports / empowers / enables the project manager to do his job.	0	2	2	22	4	3.93	0.69

		0%	*7%*	*7%*	*73%*	*13%*		
1.4.5	The project team members are committed to the accomplishment of the project.	0	0	0	22	8	4.27	0.45
		0%	*0%*	*0%*	*73%*	*27%*		
Average Mean and Standard Deviation							**3.97**	**0.68**

Source: Own survey, 2019

According to the responses of the respondents, an average mean value of 3.97(~ agree) and standard deviation of 0.68 with regard to organizational commitment shows that, the majority of the research participants agree there is an organizational commitment for the implementation of the ERP project and the majority of them agree on the issue.

A standard deviation of 0.45 to the mean value of 4.27 indicates that, the majority of the team members strongly agree that they are committed to the accomplishment of the project. Similarly, a mean value of 4.2 and standard deviation of 0.41 shows that, the majority of the respondents agree in that there is a commitment to quality by executive managers, team members and other stakeholders and there is a general consensus among them regarding the issue. Moreover, a mean value of 3.93 and standard deviation of 0.69 shows that, most of the respondents agree in that the executive management support the project manager to do his job.

Furthermore, a standard deviation 0.85 to the mean value 3.8 indicates that, the majority of the respondents agree that there are adequate resources set aside for the success of the project. However, a standard deviation of 1.03 to the mean value of 3.67 shows that there are varying opinions among the project team members in that there is a support for bringing in expertise when needed.

To summarize, the majority of the respondents strongly agree that they are committed for the accomplishment of the project and that the executive management is committed for supporting the project manager, providing adequate resources for the success of the project and for quality. However, the respondents have different opinions regarding the support they gain when legal, technical and other expertise is needed by the project team. In general, the majority of the respondents agree that there is a good organizational commitment for their ERP system

implementation project and as per the literature review; commitment of the management as well as the workforce is useful for success of a project (Mishra and Soota, 2006).

Table 14. Analysis of project management effectiveness from the aspect of project manager

No	1. People	Scale Count and Percentage					Mean	S.D
	1.5 Project Manager	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***		
1.5.1	The project manager was given adequate authority and control over the project.	0	2	4	18	6	3.93	0.78
		0%	*7%*	*13%*	*60%*	*20%*		
1.5.2	The project manager has adequate project management education, training and experience.	0	6	14	8	2	3.20	0.85
		0%	*20%*	*47%*	*27%*	*7%*		
1.5.3	The project manager's role, accountability, and responsibilities are clearly defined and communicated to stakeholders including project team members.	0	8	6	12	4	3.40	1.04
		0%	*27%*	*20%*	*40%*	*13%*		
Average Mean and Standard Deviation							**3.51**	**0.89**

Source: Own survey, 2019

Analysis of the results of the responses in relation to the project manager brings an average mean value of 3.51(~ agree) and standard deviation of 0.89. This result indicates that, the project manager has the authority as well as the adequate education to manage the ERP project implementation.

A standard deviation value of 0.78 to the mean value of 3.93 shows that, the majority of the respondents agree in that the project manager is given the adequate authority and control over the

project. Similarly, a mean value of 3.2 and standard deviation of 0.85 indicates that the majority of the respondents agree that the project manager has the adequate project management education, training and experience. However, a mean value of 3.4 and standard deviation of 1.04 shows that there are different opinions within the project team in that the project manager's role, accountability and responsibility are clearly defined and communicated to stakeholders.

In general, the majority of the respondents agree that the project manager is given the adequate authority as well as control over the project and in that the project manager has the adequate project management education, training and experience. However, there are varying opinions within the project team members in that the role, responsibility and accountability of the project manager are clearly defined and communicated to stakeholders. The responses of the majority of the participants correspond with the statement of Krezner (2009), who stated that the project manager must have strong communicative and interpersonal skills, must be familiar with the operations of each line organization, and must have knowledge of the technology used. Accordingly, this indicates that most of the respondents believe in the capability of the project manager.

4.5.2 Process

In process aspect of the project management, issues with related to requirement management, project monitoring and control, project planning and estimation and scope management are raised and the corresponding responses are received from the respondents through the standardized questionnaires.

Table 15. Analysis of project management effectiveness from the aspect of requirement management

No	2. Process	Scale Count and Percentage					Mean	S.D
	2.1 Requirement Management	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***		
2.1.1	Requirements are worded simple and each requirement consists of only one concept.	0	2	6	20	2	3.73	0.69
		0%	*7%*	*20%*	*67%*	*7%*		

2.1.2	Requirements are constantly changing and all changes are being implemented.	0	2	4	20	4	3.87	0.73
		0%	*7%*	*13%*	*67%*	*13%*		
2.1.3	Requirements are kept stable at some point.	4	4	6	14	2	3.20	1.19
		13%	*13%*	*20%*	*47%*	*7%*		
Average Mean and Standard Deviation							**3.60**	**0.87**

Source: Own analysis, 2019

According to the collected data to measure effectiveness of the project management in requirement management, an average mean value of 3.6(~ agree) and standard deviation of 0.87 shows that the majority of the respondents agree requirement management is in place within the ERP project team.

A mean value of 3.7 and standard deviation of 0.69 indicates that, the majority of the respondents agree the requirements are worded simple and that each requirements consist of only one concept. However, a mean value of 3.2 and standard deviation of 1.19 shows that there are different opinions within the participants of this research in that the requirements are kept stable at some point. On the other hand a standard deviation of 0.73 to the mean value 3.87 reveals that, the majority of the respondents agree all changes are being implemented even if the requirement are changing.

In general, the majority of the respondents agree that the requirements are worded simple and each requirement consists of only one concept. However, the majority of them agree that the requirements are constantly changing and that all the changes are being implemented. This result indicates that, the respondents believe in that the requirement management in the ERP implementation project is good with respect to documenting requirements, determining changes and managing them. And according to the literature review, success of a project is affected by the requirement management (Project Management Institute, 2013).

Table 16. Analysis of project management effectiveness from the aspect of project monitoring and control

No	2. Process	Scale Count and Percentage						
	2.2 Project monitoring and control	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
2.2.1	The project problems are generally proactively addressed (before they happen).	2	4	14	8	2	3.13	0.97
		7%	*13%*	*47%*	*27%*	*7%*		
2.2.2	There is an established project monitoring and control procedure with the acceptance of project team members.	0	2	8	18	2	3.67	0.71
		0%	*7%*	*27%*	*60%*	*7%*		
2.2.3	There is communication between management and project staff regarding the project progress data.	0	2	4	18	6	3.93	0.78
		0%	*7%*	*13%*	*60%*	*20%*		
2.2.4	Corrective actions for problems are timely and effective.	0	2	6	18	4	3.80	0.76
		0%	*7%*	*20%*	*60%*	*13%*		
Average Mean and Standard Deviation							**3.63**	**0.81**

Source: Own survey, 2019

Analysis of the responses with regard to project monitoring and control reveals an average mean value of 3.63(~ agree) and standard deviation of 0.81. This result indicates that, most of the respondents agree the process of the project monitoring and control is effectively functioning.

A mean value of 3.8 and standard deviation of 0.76 shows that most of the respondents agree corrective actions for problems are timely and effective. However, a mean value of 3.13 and standard deviation of 0.97 indicates that, the majority of the team members have neutral opinions that project problems are generally proactively addressed. A mean value of 3.93 and standard deviation of 0.78 shows that most of the respondents agree there is a communication between management and project staff regarding the project progress data. Similarly, a standard deviation of 0.71 to the mean value 3.67 reveals that most of the respondents agree and established project monitoring and control procedure is available with the acceptance of project team members.

To sum up, even if the majority of the respondents have neutral opinions in that project problems are proactively addressed, most of them agree that corrective actions for problems are taken timely and effectively. Vargas (2008) also indicated that monitoring and control shall be done in projects to track and detect any abnormalities so that preventive and corrective actions are taken in the least possible time. Similarly, the majority of the participants agree that established project monitoring and control procedure is available with the acceptance of project team members and that there is a communication between management and project staff regarding the project progress data.

Table 17. Analysis of project management effectiveness from the aspect of project planning and estimation

No	**2. Process**	**Scale Count and Percentage**						
	2.3 Project Planning and estimation	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
2.3.1	The project plan is visible/available to project team members and other relevant stakeholders.	0 *0%*	2 *7%*	6 *20%*	20 *67%*	2 *7%*	3.73	0.69
2.3.2	Each task/activities/work packages are assigned to specific project team member or	2	2	10	14	2	3.40	0.97

	members.							
		7%	*7%*	*33%*	*47%*	*7%*		
2.3.3	Critical activities are identified and/or critical path analysis is conducted.	2	2	6	18	2	3.53	0.97
		7%	*7%*	*20%*	*60%*	*7%*		
Average Mean and Standard Deviation							**3.56**	**0.88**

Source: Own survey, 2019

An average mean value of 3.56 (~ agree) and standard deviation of 0.88 for measurement of the effectiveness of the project planning and estimation reveals that, the majority of the respondents agree the function of the project management planning and estimation is available within their project team.

A mean value of 3.73 and standard deviation of 0.69 indicates that the majority of the respondents agree the project plan is available to the project team members and other relevant stakeholders. Similarly, a standard deviation of 0.97 to the mean value 3.4 shows that most of the respondents have neutral opinions with regard to the assignment of each tasks to specific project team members. However, a mean value of 3.53 and standard deviation of 0.97 reveals that the majority of the respondents agree in that the critical activities of the project are identified.

To sum up, the majority of the team members who participated in this study agree that the project plans is available to project team members and other relevant stakeholders and critical activities of the project are identified. And according to Kerzner (2009), project planning helps to improve efficiency of project operations. However, most of the respondents have neutral opinions regarding the assignment of each tasks to specific project team members.

Table 18. Analysis of project management effectiveness from the aspect of scope management

No	**2. Process**	**Scale Count and Percentage**						
	2.4 Scope management	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
2.4.1	Project scope is not clearly defined	0	6	8	12	4	3.47	0.97

	due to various reasons.							
		0%	*20%*	*27%*	*40%*	*13%*		
2.4.2	Project scope is always visible and clear to stakeholders, project team members, and management.	4	4	12	8	2	3.00	1.11
		13%	*13%*	*40%*	*27%*	*7%*		
Average Mean and Standard Deviation							**3.23**	**1.04**

Source: Own survey, 2019

Analysis of the responses of this study's participants with regard to project scope management reveals an average mean value of 3.23(~ neutral) and standard deviation of 1.04. This result indicates that, there are varying opinions among the respondents regarding this issue.

A standard deviation of 0.97 to the mean value of 3.47 indicates that most of the respondents agree in that the project scope is clearly defined. Similarly, a mean value of 3 and standard deviation of 1.11 indicates that, the respondents have different opinions regarding visibility of the project scope to stakeholders of the project.

In general, the majority of the respondents agree that the project scope is clearly defined. However, there are varying thoughts among the respondents about the visibility of the project scope to stakeholders of the project. But responses of the majority of participants indicate that there are varying opinions regarding effectiveness of the scope management.

4.5.3 Risk

In people aspect of the project management, issues with related to risk assessment and risk control are raised and the corresponding responses are received from the respondents through the standardized questionnaires.

Table 19. Analysis of project management effectiveness from the aspect of risk management

No	**3. Risk**	**Scale Count and Percentage**						
	3.1 Risk assessment	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***

3.1.1	The projects risks are documented early with details related to their impact on the project.	0 *0%*	6 *20%*	8 *27%*	14 *47%*	2 *7%*	3.40	0.89
3.1.2	Risks are assessed with the broad inclusion of stakeholders and project team members.	0 *0%*	10 *33%*	12 *40%*	6 *20%*	2 *7%*	3.00	0.91
3.1.3	Risks are analyzed based on their probability of occurrence and impact on the project.	0 *0%*	6 *20%*	4 *13%*	18 *60%*	2 *7%*	3.53	0.90
3.1.4	Any stakeholder or project team member may report a risk at any time and there is a mechanism allowing such reports.	0 *0%*	2 *7%*	6 *20%*	18 *60%*	4 *13%*	3.80	0.76
Average Mean and Standard Deviation							**3.43**	**0.87**

Source: Own survey, 2019

According to the results of the collected data regarding the effectiveness of risk assessment within the ERP project team, an average mean value of 3.43(~ agree) and standard deviation of 0.87 is obtained from the responses of the participants of this study. This result indicates that, the majority of the respondents agree to effectiveness of the risk assessment.

A mean value of 3.8 and standard deviation of 0.76 shows that the majority of the team members agree there is a mechanism that allows any stakeholders or project team members to report a risk at any time. Moreover, a standard deviation value of 0.89 to the mean value of 3.4 indicates that, the majority of the respondents have neural opinions in that the project's risks are documented

early with details related to their impact on the project. However, a mean value of 3.53 and standard deviation of 0.9 shows that, most of the respondents believe that risks are analyzed based on their probability of occurrence and impact on the project. On the other hand, a standard deviation of 0.91 to the mean value of 3 reveals that, the majority of the respondents have neural opinions in that risks are assessed with the broad inclusion of stakeholders and project team members.

Generally, the majority of the respondents agree that project team members or any stakeholders may report a risk at any time and that there is a mechanism allowing such reports. This result is consistent with the explanations included in the literature review. Similarly, most of them agree that risks are analysed based on their probability of occurrence and impact on the project. However, there are different opinions among the respondents in that risks are documented early with details related to their impact on the project and that risks are assessed with the broad inclusion of stakeholders and project team members.

Table 20. Analysis of project management effectiveness from the aspect of risk control

No	**3. Risk**	**Scale Count and Percentage**						
	3.2 Risk control	***Strongly Disagree***	***Disagree***	***Neutral***	***Agree***	***Strongly Agree***	***Mean***	***S.D***
3.2.1	Risk monitoring is an important activity in the project.	0	4	4	14	8	3.87	0.97
		0%	*13%*	*13%*	*47%*	*27%*		
3.2.2	Risk avoidance is primary method of risk control activities.	0	2	4	16	8	4.00	0.83
		0%	*7%*	*13%*	*53%*	*27%*		
3.2.3	There is a risk management plan and course of action for each high-risk items.	0	6	4	16	4	3.60	0.97
		0%	*20%*	*13%*	*53%*	*13%*		
Average Mean and Standard Deviation							**3.82**	**0.92**

Source: Own survey, 2019

Analysis of the results regarding risk control process of the ERP project reveals an average mean value of 3.82 (~ agree) and standard deviation of 0.92. These results indicate that, the majority of the respondents agree that the risk control process within the project team is functioning effectively.

A mean value of 4 and standard deviation of 0.83 shows that, the majority of the respondents agree risk avoidance is the primary method of risk control activities. Similarly, a standard deviation of 0.97 to the mean value of 3.87 reveals that, most of the respondents agree risk monitoring is an important activity in the project. Moreover, a mean value of 3.6 and standard deviation of 0.97 indicates that, the majority of the project team members agree there is a risk management plan and course of action for each high-risk items.

In general, the majority of the respondents agree in the presence of a risk management plan and course of action for each of the high-risk items. Similarly, most of them believe that risk avoidance is the primary method of risk control in the project. The majority of them also believe that risk monitoring is an important activity in the project. Risk control improves the efficiency of the risk approach to optimize risk responses (Project Management Institute, 2013) and the majority of the participants believe there is a good risk control mechanism in their project team.

4.6 Challenges faced during implementation of the ERP system

The collected data through interview shows that the project team members faced different challenges during implementation of the system. According to the project team members who participated in this study, most of the challenges they faced are related to data issues and knowledge related problems.

With respect to data issues, the respondents explained that poor quality of data was one of the challenges they faced. This problem was also identified in the literature review as one of the common delay factors of ERP project implementations and the same was found out in analysis of the causes of the project delay at CBE. Similarly, the interviewees stated that there was difficulty in data collection/migration and cleaning. Moreover, they also said that one of challenges related with data issues was the presence of inconsistency in the master supply data.

With regard to knowledge related problems, some of the interviewees mentioned that the consultants were not as experienced as the project demands. In relation to this, they said it was one of the challenges they faced as a lot of guidance is generally expected from the consultants. And because of that, they believe the knowledge transfer from the consultants to the project team was lower than expected. Moreover, they stated that they faced challenges in implementation of the ERP system due to low level of trainings. And this problem was also identified in the literature review and the subsequent analysis of the causes of the project implementation delay.

Other than data issues and knowledge related problems, the interviewees said continuous change of requirements was one of the challenges they faced. This finding is also consistent with the literature review and the analysis. On the other hand, they said they faced another challenge in preparation of the guidelines for the users which is not found in the review of the literature.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMENDATION

5.1 Summary of Findings

Assessment of the causes of the ERP system implementation project delay at CBE indicates that the majority of the project team members who participated in this study believe the four factors, which are project scope management factors, project human resource management factors, project quality management factors and project time management factors have a high contribution to schedule overrun of the project. On the other hand, when it comes to project integration management factors, even if large numbers of the team members are convinced that these factors are high contributors of the schedule overrun, it cannot be said that there is a general consensus among the total respondents regarding their level of impact on the delay. On the other hand, there is a general agreement among the participants in that the project communication management factors have only a slight contribution to the implementation delay. Accordingly, the project scope management factors, the project human resource management factors and the project quality management factors are found to have the first, second and third ranks respectively regarding their level of contribution to the delay. Moreover, when the negative impact of the individual factors to the project schedule are analysed and ranked according to the responses of the respondents, insufficient internal expertise, data issues, insufficient training, unrealistic project time line, expanded project scope and lack of business analyst with business and technology knowledge are found to hold the top three ranks.

Analysis of the respondents reply indicates that, they agree the project management in the ERP system implementation project at CBE is generally effective. The majority of the respondents agree that the project environment facilitates a horizontal communication between peers and leaders at various levels welcomes communication of project problems at any time. Similarly, they believe there is a mechanism which allows the team members or any other stakeholders to report a risk at any time. Moreover, the participants of this study strongly agree that the team members are committed for accomplishment of the project and that the executive management is committed when it comes to providing adequate resources and supporting the project manager. In connection to this, the majority of the respondents agree that the project manager is given the

adequate authority as well as control over the project. Furthermore, the project team members who participated in this study believe that the project plan is available to all the stakeholders and project monitoring and control procedure is available in the project which paves a way for corrective actions for problems to be taken timely and effectively. And when it comes to risk monitoring, they believe risk avoidance is the primary method of risk control in the ERP system implementation project.

Having said the project management in the ERP system implementation project is believed to be generally effective, different opinions among the respondents are found regarding some issues. Result of the analysis indicates that the team members do not have a general agreement in that there is a teaming up of experienced and inexperienced team members to attain a good team work. Similarly there are varying opinions among them in that leaders at various levels set example for others and in that they assign the correct task to the correct people. Moreover, there is not a general consensus among the team members concerning the support they gain when legal, technical and other expertises are need by the project team. Different opinions also exist between them regarding the effectiveness of the scope management. Furthermore, the respondents have varying opinions when it comes to inclusion of the stakeholders in the risk assessment and in early documentation of risks with details of their impact on the project.

The project team members faced different types of challenges during implementation of the ERP system in their organization. According to the collected data through interviews, they believe the major challenges they faced during the implementation are poor quality of data, difficulty in data collection/migration & cleaning, inconsistency of master supply data, poor expertise of consultants, lack of adequate training, continuous change of requirements and difficulty in preparation of guidelines for the users.

5.2 Conclusion

Implementation of ERP projects usually overrun their original planned schedule causing delayed decision making, budget overrun and other related problems. Accordingly, understanding causes of ERP project delays will help to provide appropriate solutions and to minimize the extent of the delays significantly if totally preventing schedule overrun is not possible. Project team members

play a very important role for successful implementation of the project within cost, time and quality. Accordingly, monitoring effectiveness of the project management is very important.

This research paper aimed to understand causes of the ERP project implementation delay at Commercial Bank of Ethiopia and found out that all the delay factors identified from literature review contributed to delay of the project at their company regardless of their level of impact. This shows that, even if it is difficult to generalize from just this research, most of the delay factors are common to most of the ERP projects and if proper attentions are given to them, future ERP projects will be able to maintain their planned schedule better. Moreover, assessment of effectiveness of the project management in the ERP project team of CBE revealed that, the majority of the team members agree in the presence of effective management. However, disagreement of the team members on certain issues indicates that a lot of improvement is still required to attain the desirable level of project management effectiveness. Furthermore, according to the respondents, issues related with data and knowledge were the major challenges faced by the project team. As a result, findings of this research can help organizations, researchers and other interested parties to have a better understanding of ERP project implementation issues especially with regard to ERP project delays and project management effectiveness issues.

5.3 Recommendation

Based up on the findings of this research, there are issues that need to be improved as an organization for successful implementation of the remaining tasks of the ERP project and/or other related projects.

- Sufficient internal expertise must be made available in projects as the respondents reflected that there is poor knowledge transfer from consultants to the project team members.
- A mechanism to keep good quality of data must be made available and a good data management system must be laid.
- The demographic information reveals that most of the trainings given to project team members are specifically related to the ERP project. Even if this is a good start, knowledge gaps of the team members have to be assessed regularly and appropriate trainings shall be given as needed.

- Project management trainings and tools shall be given to project manager and team managers for improved level of project management efficiency.
- A mechanism to monitor effectiveness of the project management should be laid for the ultimate achievement of project success.
- Project management gaps should be assessed and the appropriate solution should be provided timely and effectively to efficiently balance the triple constraints of project management.

5.4 Suggestion for Future Research

As this research is a case study, it is difficult to make generalizations. Accordingly, it is recommended if delay causes of ERP project implementations are assessed through survey of different organizations that are implementing the ERP system and are facing schedule overruns. Moreover, this research assessed delay causes of the ERP project and effectiveness of the project management separately. However, it would be a good research if the relationship between project management effectiveness and delay of ERP project implementation is studied further.

REFERENCES

Addis Fortune 2015 '*Commercial Bank Negotiates with Oracle for Enterprise Resource Planning*', Viewed in June 6, 2019 <https://addisfortune.net/articles/commercial-bank-negotiates-with-oracle-for-enterprise-resource-planning/>

Anderson, C 2011,'Impact of Training on project success', *IT Education and Certification: Survey*, Vol. 1, pp. 1-10.

Appuswamy, R 2000, *1st International Conference on Systems Thinking in Management, 2000: Implementation Issues in ERP*. Deakin University, Australia.

Archibald, D 2004, *The Importance and Value of Project Management for Enterprises and Institutions, June 16, 2004: forum w Europie.* Warszawa, Poland.

Burke, R (ed.) 2003, *Project Management Planning and Control Techniques*, John Wiley & Sons Ltd, England.

Cook-Davies, T 2002, 'The "real" success factors on projects', *International Journal of Project Management*, vol. 20 , pp. 185-190.

Commercial Bank of Ethiopia n.d, '*Facts and Figures'*, viewed June 6, 2019 <https://www.combanketh.et/AboutUs/FactsandFigures.aspx>

Dahlen C. & Elffson J., 1999, *An Analysis of the Current and Future of ERP Market – with Focus on Sweden*, thesis, The Royal Institute of Technology.

Davies A., 2019, *Project Management For Large, Complex Projects*, Association for Project Management, Princes Risborough, United Kingdom.

Demir K. A., 2008, *Measurement of Software Project Management Effectiveness*, Naval Postgraduate School, California.

Getachew D., 2018, *Analysis of Critical Success Factors affecting Enterprise Resource Planning (ERP) Project Implementation: the case of Commercial Bank of Ethiopia*, thesis, Addis Ababa University, College Of Business And Economics, School Of Commerce.

Elnaga, A and Imran, A 2013, 'The effect of Training on Employee Performance', *European Jouranl of Business and Management*, vol. 5, no. 4, pp. 137-147

Goff, S 2007, 'Tight, Inflexible Deadlines; Scourge of Projects' *international project management association*, pp. 1-3

Grant, M 1996, 'Toward a Knowledge-Based Theory of the Firm', *Strategic Management Journal*, Vol. 17, no. Winter Special Issue, pp. 109-122.

Habibi, F, Barzinpour, F & Sadjadi, S 2018, 'Resource-constrained project scheduling problem: review of past and recent developments', *Journal of Project Management*, vol. 3, no. , pp. 55-88.

Hossain L, Patrick J. D., and Rashid M., 2002, *Enterprise Resource Planning: Global Opportunities & Challenges*, Idea Group Publishing.

Huber, B, n.d, *Experts in Organizations: The Power of Expertise*, University of Zurich, Switzerland.

Hwang W., 2011, *The drivers of ERP implementation and its impact on organizational capabilities and performance and customer value*, thesis, The University of Toledo.

Just, M & Murphy, J 1994, *The Effect of Resource Constraints on Project Schedules*, AACE Transactions.

Kafile, M & Fore, S 2018, 'Effects of Procurement Processes on Project Execution in a Project Management Company in Cape Town, South Africa', *International Journal of Business and Administrative Studies*, vol. 19, no. 4, pp. 176-186.

Kerzner H., 2009, *Project Management: A Systems Approach to Planning, Scheduling and Controlling.* John Wiley & Sons, Inc. Canada.

Kothari, 2004, *Research Methodology: Methods and Techniques,* New Age International Publishers, New Delhi

Lipaj D, Davidaviciene V., 2013, *Influence of Information Systems on Business Performance,* Vilnius Gediminas Technical University.

Madhuri, K & V, S n.d, *Influence of Scope Creep on Project Success: A Comparative Study between Conventional Approach Verses Agile Approach,* Dayananda Sagar Institutions, Bangalore.

Maschal, S 2017, Critical *Success Factors of Implementing Enterprise Resources Planning (ERP) System in Sourcing: The case of ethio telecom*, thesis, Addis Ababa University, School of Commerce.

McGevna, V 2012, The Importance of a Realistic Schedule, viewed 21 October, 2019, <>

Menon S., Marc Muchnick M., Clifford Butler C., & Tony Pizur.,2019, *Complexity Theory: Insights from a Canadian ERP Project Implementation*, Canadian Center of Science and Education

Mizra, M, Pourzolfaghar, Z & Shahnazari, M 2013, 'Significance of Scope in Project Success', *Procedia Technology*, vol. 9, pp. 722-729.

Mishra, R & Soota, T 2005, *Modern Project Management*, New Age International Publishers, New Delhi.

Monk, E & Wanger, B (ed.) 2009, Concepts *in Enterprise Resource Planning*, Course Technology Cengage Learning, USA

Naqvi, I, Aziz, S & Rehman, K 2011, 'The impact of stakeholder communication on project outcome', *International Journal of Business Management*, vol. 5, no. 14, pp. 5824-5832.

Panorama Consulting Solutions 2018, *2018 ERP Report*, Greenwood Village

Pedersen, T, Soo, C & Devinney, T 2002, *The Importance of Internal and External Knowledge Sourcing in Firm Performance: A Latent Class Estimation*.

Pinto, J & Slevin, D 1989, 'The Project Champion: Key to Implementation Success', *Project Management Journal*, pp. 15-20.

Project Management Institute 2010, *The Value of Project Management*, Project Management Institute.

Project Management Institute 2012, *Project Communication Management: study notes*, Project Management Institute.

Project Management Institute (ed.) 2013, *A Guide to the Project Management Body of Knowledge*, Project Management Institute, Inc, Pennsylvania, USA

Portiviti Inc 2012, *ERP Implementation Risk: Identifying, Monitoring and Remediating Issues Throughout the Project to Ensure success*, Portiviti Inc.

Saunders, M, Lewis, P& Thornhill, A (ed.) 2009, *Research Methods for Business Students*, Pearson Education, England

Sinamo, A & Marx, J 2012, ' A Successful ERP Implementation in an Ethiopian Company: A case Study of ERP Implementation in Mesfine Industrial Engineering Pvt. Ltd, Procedia Technology, vol. 5, pp. 40-49.

Sumner, M (ed.) 2014, *Enterprise Resource Planning*, Pearson Education Limited, England

Thangamani, G 2018, 'Practical Risk Assessment Methodology for ERP Project Implementation', *Journal of Economics, Business and Management*, vol. 6, no. 3, pp. 84-90.

Thembalath, S & Mathew, J 2016, 'Delay Management A Fast Track Mitigation Strategy Using ERP' *International Journal of Innovation Research in Science, Engineering and Technology*, vol. 5, no. 8, pp. 15573-15581.

Tsai, W, Chen, S, Hwang, E & Hsu, J 2010, 'A Study of the Impact of Business Process on the ERP System Effectiveness', *International Journal of Business and Management*, vol. 5, no. 9, pp. 26-37.

Vargas, R 2008, *Practical Guide to Project Planning*, Auerbach Publications, New York.

Veneklasen, L 2007, *A New Weave of Power, People & Politics*, Stylus Publishing, USA

Vuksic, V, Spremic, M 2005, 'ERP System Implementation and Business Process Change: Case Study of a Pharmaceutical Company', *Journal of Computing and Information Technology*, pp. 11-24.

Walliman, N (ed.) 2011, Research Methods The Basics, Taylor & Francis Group, New York.

Westland, J 2006, The Project Management Life Cycle, Kogan Page Limited, USA

Wong, A, Scargrough, H, Chau, P & Davison, R, *Critical Failure Factors in ERP Implementation*.

Xu, H, Nord, J, Brown, N & Nord, G 2002, 'Data quality issues in implementing an ERP', *Industrial Management & Data Systems*, pp. 47-58.

APPENDICES

ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

DEPARTMENT OF PROJECT MANAGEMENT

Dear Respondents,

As a partial fulfilment of Master's Degree in Project Management at Addis Ababa University, School of Commerce, I am conducting a research on ERP project implementation issues with regard to project management practices and delay causes of ERP project's go-live date. I kindly request your assistance to fill out the questionnaire for successful completion of this study. The information provided will only be used for this case study and the overall purpose of this questionnaire is exclusively academic. I would also like to inform you that the responses you provide will be kept confidential and please do not indicate your name.

I would like to express my heartfelt thanks in advance for taking your time to complete this questionnaire.

Enqumesk Mekonnen
Post graduate student, Project management
A.A University, School of Commerce, Faculty of business and economics
E-mail:- donmekat@yahoo.com
Addis Ababa

PART I: **Demographic Information**

1. Gender?
    - ❑ Male
    - ❑ Female
2. Age?
    - ❑ 18-24
    - ❑ 25-34
    - ❑ 34-45
    - ❑ 45-54
    - ❑ 65 or over
3. Educational level?
    - ❑ Diploma
    - ❑ Degree
    - ❑ Masters
    - ❑ PhD
4. Position in the organization?
    - ❑ Junior Officer
    - ❑ Officer
    - ❑ Senior Officer
    - ❑ Team Manager

If other specify_____

5. Position in the Project Office?
    - ❑ Project manager
    - ❑ Project team member
    - ❑ Supervisor
    - ❑ Consultant

If other specify_____

6. Year of experience in the organization?
    - ❑ Below 5
    - ❑ 6-10
    - ❑ 11-15
    - ❑ 16 and above
7. Year of experience in working on projects?
    - ❑ Below 1
    - ❑ 2-3
    - ❑ 4-5
    - ❑ Above 5
8. Have you taken project related training provided by any institutions?
    - ❑ Yes
    - ❑ No

If, yes please specify the type of training that you have received----------

PART II: **Causes of ERP project implementation delay**

Please indicate your level of agreement on the statements by circling the numbers in the column using the following rating scale.

Where: 1 = Very Highly 2 = Highly 3 = Mildly 4 = It doesn't contribute 5 = No opinion

In your opinion, to what extent do you think these factors contributed to project implementation delay of the ERP system in your organization?

No	Factor	Scale				
1	Failure to re-design business processes	1	2	3	4	5
2	Unrealistic project timeline	1	2	3	4	5
3	Expanded project scope	1	2	3	4	5
4	Vendor did not deliver on a timely manner	1	2	3	4	5
5	Inability to avoid technological bottlenecks	1	2	3	4	5
6	Resource constraints	1	2	3	4	5
7	Data issues	1	2	3	4	5
8	Priority issues	1	2	3	4	5
9	Insufficient training and re-skilling	1	2	3	4	5
10	Insufficient internal expertise	1	2	3	4	5
11	Lack of business analysts with business and technology knowledge	1	2	3	4	5
12	Failure to effectively mix internal and external expertise	1	2	3	4	5
13	Lack of senior management support	1	2	3	4	5
14	Lack of proper management control structure	1	2	3	4	5
15	Lack of a champion	1	2	3	4	5
16	Ineffective communications	1	2	3	4	5
17	Failure to adhere to standardized specification which the software supports	1	2	3	4	5
18	Lack of integration	1	2	3	4	5

PART II: **Effectiveness of the project management**

Please indicate your level of agreement on the statements by circling the numbers in the column using the following rating scale.

Where: 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree

No	Factor	Scale				
	1. People					
	1.1 Communication					
1.11	Communication and coordination for activities are planned in the project plan.	1	2	3	4	5
1.12	As a project manager or a project team member, I can easily communicate my messages and I can be understood.	1	2	3	4	5
1.13	The project environment facilitates horizontal communication that is between peers.	1	2	3	4	5
1.14	The project status is visible to every stakeholder and project team member.	1	2	3	4	5
1.15	The project manager, management team, and team leaders are always accessible to project team members in a timely manner.	1	2	3	4	5
1.16	The project environment facilitates freedom in reporting of project problems.	1	2	3	4	5
	1.2 Team Work					
1.2.1	The project is adequately staffed during the project development.	1	2	3	4	5
1.2.2	There are regular status meetings to self-assess the project team's performance and morale.	1	2	3	4	5
1.2.3	The project environment facilitates teaming up inexperienced team members with the experienced team members.	1	2	3	4	5
1.2.4	The project team is empowered with adequate resources to do their tasks.	1	2	3	4	5
1.2.5	The project environment offers professional growth potential for team members.	1	2	3	4	5

	1.3 Leadership					
1.3.1	The leaders at various levels sets example for others.	1	2	3	4	5
1.3.2	The leaders at various levels are effective problem-solvers in technical and social issues.	1	2	3	4	5
1.3.3	The leaders at various levels assign correct tasks to correct people.	1	2	3	4	5
1.3.4	The leaders at various levels easily delegates authority when necessary.	1	2	3	4	5
1.3.5	The leaders at various levels welcome communication of project problems at any time.	1	2	3	4	5
	1.4 Organisational Commitment					
1.4.1	There is commitment to quality by executive management, team members and other stakeholders.	1	2	3	4	5
1.4.2	Adequate resources are set aside for the success of the project.	1	2	3	4	5
1.4.3	There is support for bringing in expertise when needed (Such as technical, legal, contracting etc.)	1	2	3	4	5
1.4.4	The executive management supports / empowers / enables the project manager to do his job.	1	2	3	4	5
1.4.5	The project team members are committed to the accomplishment of the project.	1	2	3	4	5
	1.5 Project Manager					
1.5.1	The project manager was given adequate authority and control over the project.	1	2	3	4	5
1.5.2	The project manager has adequate project management education, training and experience.	1	2	3	4	5
1.5.3	The project manager's role, accountability, and responsibilities are clearly defined and communicated to stakeholders including project team members.	1	2	3	4	5

	2. Process					
	2.1 Requirement Management					
2.1.1	Requirements are worded simple and each requirement consists of only one concept.	1	2	3	4	5
2.1.2	Requirements are constantly changing and all changes are being implemented.	1	2	3	4	5
2.1.3	Requirements are kept stable at some point.	1	2	3	4	5
	2.2 Project monitoring and control					
2.2.1	The project problems are generally proactively addressed (before they happen).	1	2	3	4	5
2.2.2	There is an established project monitoring and control procedure with the acceptance of project team members.	1	2	3	4	5
2.2.3	There is communication between management and project staff regarding the project progress data.	1	2	3	4	5
2.2.4	Corrective actions for problems are timely and effective.	1	2	3	4	5
	2.3 Project planning and estimation					
2.3.1	The project plan is visible/available to project team members and other relevant stakeholders.	1	2	3	4	5
2.3.2	Each task/activities/work packages are assigned to specific project team member or members.	1	2	3	4	5
2.3.3	Critical activities are identified and/or critical path analysis is conducted.	1	2	3	4	5
	2.4 Scope management					
2.4.1	Project scope is not clearly defined due to various reasons.	1	2	3	4	5
2.4.2	Project scope is always visible and clear to stakeholders, project team members, and management.	1	2	3	4	5

	3. Risk					
	3.1 Risk assessment					
3.1.1	The projects risks are documented early with details related to their impact on the project.	1	2	3	4	5
3.1.2	Risks are assessed with the broad inclusion of stakeholders and project team members.	1	2	3	4	5
3.1.3	Risks are analyzed based on their probability of occurrence and impact on the project.	1	2	3	4	5
3.1.4	Any stakeholder or project team member may report a risk at any time and there is a mechanism allowing such reports.	1	2	3	4	5
	3.2 Risk control					
3.2.1	Risk monitoring is an important activity in the project.	1	2	3	4	5
3.2.2	Risk avoidance is primary method of risk control activities.	1	2	3	4	5
3.2.3	There is a risk management plan and course of action for each high-risk items.	1	2	3	4	5

Interview Questions

1. When was the project office launched?
2. How many team members did the project office originally had?
3. How many of them were team managers?
4. For how many hours in a day and how many days in a week does the project office work?
5. Which ERP system provider was chosen in your organization?
6. Was the system planned to be purchased from shelf or was it planned to be customized?
7. Which company took the contract to implement the ERP system?
8. Which E-business suits of the ERP system were planned to be implemented in your organization?
9. In which phase is the project currently?
10. How many modules of the ERP system are already set to go-live and how many of them are remaining?
11. According to the current time schedule, when will be the remaining modules of the ERP system completed?
12. According to the original contract, what was/is the end date of the project timeline in which the project was planned to be successfully completed?
13. Which milestones were identified to be delayed?
14. When the project delay was identified, what kind of reactive measures were taken?
15. Were the provided solutions as effective as expected?
16. In your opinion what other factors are present that contributed to time overrun of the ERP system implementation project at your organization?
17. What were the challenges faced during implementation of the modules that were set to go-live?
18. In your opinion what should be done to effectively and efficiently implement the remaining modules of the ERP system?