Critical Success Factors to Information Technology Projects Implementation: the Case of Commercial Bank of Ethiopia

This Project Work is Submitted to the Department of Business Administration and Information Systems Presented in Partial Fulfillment of the Requirement for Master's of Arts Degree in Project Management

By: Elias Yenehun Gedamu

Addis Ababa University College of Business and Economics
School of Commerce
June, 2018

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Approved by Board of Examiners

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Statement of Certification

This is to certify that **Elias Yenehun Gedamu** has carried out his project work on the topic entitled "Critical Success Factors to Information Technology Projects Implementation: the Case of Commercial Bank of Ethiopia" is his original work and is suitable for submission for the award of Masters of Arts Degree in Project Management.

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Abdurazak Mohammed (PhD)

(Advisor)

June, 2018

Declaration Statement

I, the undersigned, hereby declare that the work contained in this project work is my own original work and that I have acknowledged all additional sources I have used and/or quoted directly.

Name	**Signature**	**Date**
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Acknowledgement

First of all, I thank and praise the Almighty God for this wonderful works which He has done throughout this research and the study program as a whole.

I wouldn't have been able to complete this graduate program in Project Management, at least on time, without my Dad's (Yenehun Gedamu) moral and financial assistance.

My earnest gratitude shall then go to my advisor, Dr. Abdurazak Mohammed, whose comments and invaluable advice contributed tremendously to the success of this thesis. Most importantly I would like to appreciate my advisor's motivation and sense of flexibility he has gave me. This allows me to use all my potential and will always remain be there shaping me to stand on my toes and a strong professional in the field.

Lastly, I am very grateful to previous information technology project team members who are working at different position in Commercial Bank of Ethiopia for helped me in providing back ground information as well as dedicated their time to provide required responses.

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List of Acronyms

AML	Anti Money Laundering
BI	Business Intelligence
CBE	Commercial Bank of Ethiopia
CRM	Customer Relationship Management System
CSFs	Critical Success Factors
ERP	Enterprise Resource Planning System
ICT	Information Communication Technology
IS	Information Systems
IT	Information Technology
ITIL	Information Technology Infrastructure Library
IS/IT	Information System/Information Technology
LMS	Learning Management System
PCA	Principal Component Analysis
SPSS	Statistical Software Package for Social Science

Abstract

For an organization performing its business in today's competitive business environment information technology/information system is already considered as a critical factor. And, given the fact that IT system projects are one of the most costly investment decisions and one of a very few major strategic dimensions to giant service providers (including Commercial Bank of Ethiopia (CBE)) and similarly getting them implemented is majorly a challenging task by itself. The overall purpose of this project work is to discover the CSFs to IS/IT system projects implementation process in terms of their empirical importance in the case of Commercial Bank of Ethiopia (CBE). Regards to the methodology employed for this project work, a quantitative data collected from previous implementers of IS/IT system project(s) used, whereas Principal Component Analysis (PCA) statistical estimation technique was used together with its related data testing tools. Whereas, the analysis part consists of ranking CSFs through descriptive statistics, computing commonalities, unrotated and rotated component matrix, total variance calculation, Pearson correlation technique, and covariance etc. to materialize the above analysis, a statistical software package for social science (SPSS) was used. Using the above methods of analysis, Top Management Support, Team Work, Composition, and Capability, Project Leadership, Proper and Adequate Training, Project Management, Technological Infrastructure, Business Process Adjustment, Information Systems Adjustment, Processes and Sub-processes (Stakeholders) Participation, and Business Process Fit: Data Fit were found as an individual key success factors. Whereas, Five major principal components (dimensions) of CSFs were extracted for this particular project work, these are already labeled as Process related CSFs, Quality related CSFs Enterprise related CSFs Project related CSFs, Business and IT System Alignment related CSFs. Each of these dimensions contained from seven to two high loadings (variables or CSFs). All in all, organization looking for adopting various state-of-the art IS/IT system technologies in general, and commercial banks in particular to be efficient and effective they have to focus on the areas organizational and related business readiness issues, such as in terms improving technological infrastructure, business processes and information systems adjustments, processes and sub-processes participation and/or stakeholders and more importantly higher and proper support of top managements. To this end, providing a better attention to those CSFs explored as key one beyond all other critical factors are suggested to be a proper move toward s achieving major objectives of successful implementation of IS/IT project implementation.

Key Words*:* Project, Implementation, Critical, Success, Information, Technology, System, PCA, Ranking

CHAPTER ONE

1. General Background

In today's competitive environment, computerized information systems usage has played a key role in the business success model. Due to this, systems utilization is regarded as a major determinant of productivity and achieving competitive excellence (Chang, *et al.* 2008). As stated by Schierholz, *et al.* (2004, p.454-465) referring to other researcher named Schierenbeck, (2003. p.26) banks should focus on improving the efficiency of their operational business while maintaining, or even extending the flexibility necessary to stay competitive in the market. Measures to implement these efforts include the digitalization and standardization of operational business processes such as transaction banking.

These days, the financial industry in general, and commercial banks in particular are facing various changes as a result of, such as globalization, deregulation, disintermediation, technological advancements, and new competitive structures related forces. In searching for a strategic response to such these and other related changes, it is found to be critical to work day-out and day-in as a reactive strategic response or at the same time to realize advanced operational efficiency and better flexibility within the banking organizations. While, such a serious call to have quite reliance of adopting various information technology (IT) projects is being at its ever increasing situation, it is an inalienable fact that to bear the fruits of these projects outcome successfully organizations have to know or informed what are really matters most and/or considered to be a critical success factors and needs critically higher attention by project managers and other concerned stakeholders for implementation effort/activities of IT-projects doing well (Fayaz, *et al.* 2017, p.73).

Similarly, Commercial Bank of Ethiopia, the biggest and state bank of the country has been trying to adopt various properly selected and manageable up-to-date technologies in order to make its financial business run in an efficient, effective, and competitive manner both domestically and internationally. Such moves of technology adoption endeavors in order to meet it business objectives are expected to be implemented/executed successfully. In other words, major challenges of implementing information technology projects should be identified and solved both proactively and reactively. This have been achieved and being achieved within the Bank through the digitalizing and standardizing of core operational

business activities includes both proper introduction and implementation of standard software systems, such as - Enterprise Resource Planning System (ERP) .

While, CBE is wreak havocking related to its inalienable effort on enhancing resource/deposit mobilization, provision loans and advances and other related major services, the bank have been striving in order to support its financial business activity by various up to date *cross-functional* enterprise systems. Consequently, CBE has been implementing different state-of-the-art ways of delivering of its major financial it requires proper, fast, reliable, secure, and services. Such systems most importantly expected to tailored in a manner that is aims to meet customers' needs/expectations is mandatory enough in order to keep CBE's current promising business growth momentum in terms of its profit status in highly competitive business environment.

1.1. Statement of the Problem

The Commercial Bank of Ethiopia (CBE) has a vision to become World Class Commercial Bank by the year 2025, in alignment to the Ethiopia's aspiration to become the middle earning country within the same year. In order to be a World Class Commercial Bank it is the most critical factor or an indisputable fact to consider the necessary precondition to equip itself with state-of-the-art technologies (such as, adopting various properly selected Information Technology projects). This is to both achieve and exceed its ultimate business targets under its financial intermediation activities. It is especially true taking in to account the prevailing competitive global business arena, that demands and/or forces big organizations to change and improve their ways of doing to achieve service excellence and satisfy and retain their dear customers, and as a result to sustain their business growth or to stay profitable.

As it is already noticed after having a thorough review of some of the studies that were only aimed to exploring CSFs to the successful execution and identifying major implementation challenges IS/IT or ICT related projects in a few organizations found in Ethiopia. For instance, researchers were majorly focused on identifying Key CSFs merely to Enterprise Resource Planning (ERP) system project implementation aimed to recognize the critical factors required to assist various project implementers and decision makers engaged at

different level. In contrast to the above, this project work intentionally prefer to provide much better attention by taking into account both additional CSFs and in addition to Enterprise Resource Planning (ERP) aimed to consider other ICT or IS/IT projects. In doing so, it is tried to consult the Bank's recent nine month corporate strategy, for the strategic year between 2015/16 and 2019/20, as clearly stated within this strategic document the ongoing IT related technological project implementation related initiatives that the Bank has been working to institutionalize (it includes: Automations of Support processes via adopting Customer Relationship Management System (CRM); Call Center; Agent Banking; Computer Aided Audit Management (Audit Software); Bio-metrics; Anti Money Laundering (AML); Learning Management System (LMS); Risk management; Electronic Document Management System; Upgrade Data Centre; Information Technology Infrastructure Library (ITIL) Framework; and Upgrading Core and Card Banking systems).

Besides, Aziz, *et al.* (2012, p.1) stated that for an organization performing its business in this competitive business environment information technology/information system is already considered as critical tools. The above same researchers conclude that it is a main issue to get an IS/IT execution processes right or doing well organization. Consistently, the authors Nwakanma, *et al*. (2013, p.130) besides to an effort of adopting a world class IS/IT related up-to-date technologies within an organization, stated that to realize success in project implementation activities it is significant to have a realistic schedule and achieve proper monitoring so as to be conscious of the early warning signals and managing them both efficiently and effectively. In doing so, it is reasonably enough to make a kind of explanatory study and as a result identify an individual or combination of key factors that helps various IT-projects' execution related endeavors are well done. This could be materialized if and only if critical success factors are properly identified.

In consistent to the above theoretical and empirical motivations, the researchers Imtiaz, *et al*. (2013, p.3154-58) mentioned that joint understanding of project management as well as information technology issues for decision makers in relation to its future new or expansionary IS/IT project implementations and other financial and non-financial organizations that have similar plan to do throughout the execution of these enterprise system based similar projects is too significant. Similarly, the final study outcome of this project

work expected assist responsible project personnel to resolve major challenges, such as, staying behind schedule and cost overrun and to avoid or minimize such and other related incidences both proactively and reactively.

1.1.1. Research Questions

In addressing the above problem statement, it is tried to put the following three major research questions.

i) What are the key individual critical success factors influence significantly the successful execution of IS/IT projects in CBE?
ii) What principal components or groups of variables can be identified about the successful execution of IS/IT projects in CBE?
iii) How can a priori considered and statistical valid CSFs be ranked in terms of their influence on the successful implementation of IS/IT projects in CBE?

All the above research questions will be addressed based on all the relevant and/or valid research findings/results that will be obtained during the course of this project work.

1.2. Objectives of the Study

1.2.1. The General Objective

The overall objective of the study is to identify critical factors that matter most the successful implementation of IT system project the case of Commercial Bank of Ethiopia (CBE).

1.2.2. The Specific Objectives

Whereas, in addressing the above overall objective and aiming to trying to respond the above research questions, the study will focus on answering the following specific objectives. These are:

i) Identification of major individual factors affecting successful execution of various IT Projects in CBE.
ii) To explore principal components or dimensions (groups of variables) that has collective influence by each to successful IT-Projects implementation in CBE.

iii) Ranking CSFs according to their contribution towards IS/IT project execution success in CBE

1.3. Statements of Hypothesis

Consequently, the following Null hypothesis will be going to be tested. These are:

Ho1**:** Individual CSFs do not have significant influence on the successful execution of IS/IT projects in CBE.

Ho2**:** There are no groups of Variables (CSFs) or components that have considerable joint influences on IT-Projects execution success in CBE.

Ho3**:** There is no noteworthy disparity among each of the variables in terms of their influence to successful IS/IT projects execution

1.4. Significance of the Project Work

In addition to being an academic exercise to fulfill the requirement of the post-graduate study program in Project Management, given the fact that, though there are too many factors that may determine the successful implementation of IT system project, decision makers at the Bank (CBE) can be especially benefited from this project work outcomes, as it aims to identify the key critical factors that matter most to the successfully execution of IS/IT projects in CBE and other similar organizations in Ethiopia. To end with another important significance of the project work is that, the result can be used as an input for other researchers to further study. In other words, given series of serious and related concerns mentioned within the above conceptual framework of this project work, exploring key CSFs to IT projects execution is already considered as an important choice of research or project work title. This is important given the fact that ICT or IS/IT system projects are one of the most costly investment decisions and one of a very few major strategic dimensions to big service providers and/or organization, and similarly getting them implemented is majorly a challenging task by itself.

1.5. Scope of the Study

In general, it would have been great to conduct a study of its kind by exploring critical factors that matter most the successful implementation of IS/IT system project the case of

Ethiopia, yet this project work is delimited itself to Commercial Bank of Ethiopia. This is because, this project work is an exploratory study type it would have been great to extract may be many countrywide key success factors or even across different sector of the industry. The other key concern of this section of the project work is that the outcomes of this project work necessitate careful interpretation, it is due to the fact that, this project work examines the perceived success factors of IS/IT projects implementation team members of the Bank (CBE) rather than determining the real success derived from the goal related measures of successful IS/IT projects implementation.

1.6. Limitation of the Study

Due to the existence of extremely too many IS/IT system project execution related critical success factors (CSFs) identified or explored by various researchers around the globe, it was difficult to consider all or make a thorough review of all the major previous research literatures due to limited time. Besides, though this project work was intended to explore critical success factors to IS/IT system projects implementation in the case of CBE, the study was merely considered project implementers who have been participated at the head office level. Rather it would also have been good to incorporate some of those individuals, i.e., project implementers who have been participated in different IS/IT system projects implementation related tasks in all or some of the fifteen districts outside the capital city Addis Ababa, i.e., in those districts found all over Ethiopia.

1.7. Organization of the Project Work

The project work is structured in five major chapters. The first chapter gives a general background or highlights about the problem and its concerns or approach. The second chapter presented a detail review of related literature which was related to the study. Chapter three comprised of detailed research methodology that is employed for this project work. The fourth chapter consists of Data Presentation, Analysis and Result Interpretations. The last chapter of this study finalized the study by providing summery of Result Summaries and Conclusions and Recommendation.

CHAPTER TWO

2. Theoretical and Empirical Literature Reviews

Here, in an effort of searching and/or identifying what were considered as CSFs to IT project implementation success, it will be tried to review research articles that were published since the last thirty (30) years. That is, given the fact that the financial system all in all in Ethiopia is found at its very embryonic stage, it is thought that experiences that will be obtained as success stories or regards to factors considered as a CSFs for a successful execution of IT projects identified through similar studies for organizations doing business within both developed and developing nations and/or around the world is believed to be a reasonable one. To identify papers which sufficiently embodied the interest behind the given research title, it has been tried to search and review various available research articles from an Internet.

2.1. Definition of Project Success

As it is defined by the popular author Kerzner, (1995) project success is considered to be achieved when a project is completed within time, cost/budget, scope, performance requirements and user acceptance. The above same author also discussed that the project should be completed without corporate culture changes. For instance, if an organization has a specific procedure/manual to take care of customers/users, this should not be changed just because the project manager desires/wishes success) and without affecting the organization's major work flow. To put precisely, the project manager/leader ought to manage/lead the project and the project environment under the umbrella of its strategic goals/objectives, rules and regulations, procedure/guidelines etc. Whereas, as stated by Lewis, (2001) it is not always simple give a specific meaning to project success. The author added that project success can be stated as meeting performance requirements, cost, time, and project scope. Yet, projects that achieve all the above success factors may not be considered immediately as a successful project. Besides to this, there is a condition where projects are assumed as successful projects, while these projects failed to meet some of and even all of the factors (Lewis, 2001).

2.2. Definition of Critical Success Factors

As the concept behind *Critical Success Factors* (CSFs) has emerged followed by the interest of indentifying and knowing what success factors were mattered or used most by every sector to achieve their business mission, objectives or goals (Aziz, *et al.* 2012, p.1-2). As stated by the same authors, CSFs helps accomplish certain activities in the correct manner to meet intended objectives. It can also be defined that, CSFs are critical areas that are required to be acted upon in order that an organization can achieve its goals.

These were during the years of 1980s' the research world has revealed the importance and concept behind Critical Success Factors (CSFs), with the intention of discovering the reason behind only a few businesses have been doing well than many of its competitors . CSFs can be defined as "those things that must be done if a company is to be successful and it is quantifiable and controllable" (Fayaz, *et al.* 2017, p.73).

2.3. Information System/Information Technology System

The context that needs to be stated regards to the Information System/Information Technology System (IS/IT) system is that it is about adopting various software system packages as a component of IS/IT system, such as, in the bank. The software aspect of the system has turn out to be dreadfully important given its capability to carry out the needed solution that allows the management of the organization to smooth the progress and/or processing of information between various types of those of IS or IT systems (Turban, *et al*. 2006).

2.4. Review of Critical Success Factors to Information System/ Information Technology Project Implementation

Under this section it has been tried to discuss or put in detail literature review of various research works that were done regards to critical success factors or key success factors or factors affecting successful project execution in the areas of Information System or Information Technology (IS/IT).

As investigated by Schierholz, *etal*. (2004, p.461) all in all there were fourteen (14) factors mentioned as CSFs and classified as general and specific success factors from the

conducted the case of four the four banks. The followings seven (7) factors were found and considered as General success factors, i.e. IT project management factors known from almost any software project. These are: 1) Top management support; 2) High motivation of project staff; 3) Rigid project management; 4) Early involvement of business units; 5) Mixed teams including IT and business functions; 6) Management of expectations; and 7) Open communication. Whereas, specific success factors. i.e. those already identified as CSFs specifically to banking standard software implementations. On the other side, *specific success factors* consist of: 1) Step-by-step introduction to control complexity and risk; 2) Thorough definition of requirements and target architecture; 3) Extensive test management; 4) Cross-project coordination to reflect the complex interdependencies typical of banking software support processes across business units; 5) Release management coordinating the roll-out of new releases across multiple modules and business units; 6) Good cooperation with the implementation partners; and 7) Process redesign reflecting the standard processes as supported by the standard software (ibid, *etal*. 2004, p.461).

Information technologies have a *central role* to bring high adaptation rate in dealing with very complex settings and an indisputable aspect to keep refining corporate performance and its business result in today's changing and/or competitive business climate. Nations, regardless of its development status, are admitting or adopting various up-to-date information technologies related enterprise systems. Whereas, such moves of implementing IT-projects has been turned out amid a number of impediments on top of various conflicts, deficiency in organizational management issues, poor support by top management and less understanding of the technology at stake. Here, it is essential to note that all responsible personnel expected to take important part during the course of technology implementation effort. Besides to the above, the success of IT-project depends on the extent that final user's become accustomed. To this end, as organizations looks for an advancement in its business process through allocating all the required resources in adopting on selected information technologies, project required to be designed in terms of its internal capabilities, on schedule delivery, outlay, quality and avoidance of various risks (Fayaz, *et al.* 2017, p.73-74).

Aziz, *et al.* (2012, p.8) in their purely literature review based research; they first identify what matter most from their various article reviews and then made their conclusion on CSFs to IS/IT implementation from the human resource (HR) (project personnel's) perspective. As the above researchers stated, the reason behind making their research focus/scope merely in the HR area, is that in all organization, people are the basic issue to worry about. Personnel assigned to the project have a huge impact on determining the overall fate of IS/IT implementation. They *found* that top management support, knowledge or experience, commitment, *training* or skills, communication, user participation, attitude, motivation, leadership/ IT leader, willingness to change, management style and organizational culture are people related CSFs to IS/IT implementation. Based on their numerous research articles review, the above researchers observed that top management support as a key CSF. That is as organization's top or senior executives are expected to be in-charge of facilitating sufficient resources accessibility, i.e. all the required resources including finance/budget and project personnel and equipment to the successful execution process of IS/IT projects in Malaysia (Aziz, *et al.* 2012, p.1-8).

As identified by Egorova, (2009, p.53-55) considered in his study as software projects success factors was fifteen. Yet, because of the variable interest of this research, it is decided to use only twelve factors. As stated by Ibid, (2009, p.54) factors in his study refer to any measure that can strongly assist to an accomplishment of positive results for any software project. On the other side, as mentioned by Egorova, (2009, p.55) related to Successful project characteristics to identify overdone software projects. On the way to identifying critical success factors to software projects, under his questionnaire questions were simply devised in a way that respondents to mark or choose three success factors among the all finally considered and/or listed factors both for the project factors and the project characteristics. The followings are list of twelve Project Factors. These are:

1) Customer/End-users involvement
2) Good relation between personnel
3) Team experience
4) Experienced project manager
5) Completed and accurate requirements
6) Very good project manager
7) Well defined communication
8) Overall good requirements

9) Realistic expectations
10) Good estimations
11) Committed sponsor/champion
12) Good schedule

Whereas, as per Egorova, (2009, p.55) the researcher considered the following list of Project Characteristics;

1) Met business goals and user requirements
2) Develop new skills
3) Works in the way it should
4) Completed on *time* and within *budget*
5) Completed project
6) Met quality requirements
7) Technical challenge
8) Learning experience
9) Within budget
10) Team experience

As stated under research article review done by Fayaz, *et al.* (2017, p.74-75) efforts on establishing CSFs encompass various empirical importance since top decision makers of an organizations a can employ and benefited in a great deal from those reasonably and/or well indentified critical determining factors on recognizing/knowing what matters most to get its information technology projects implementation efforts doing well. And, as discussed by the above researchers, in doing so everything matters directly rests on the effort of discovering and become aware of the key critical success factors in relation to organizations Information Technology project execution endeavor doing well. That is, as CSFs are expected to give decision makers an absolute insight towards finding a clear way to successful project implementation outcomes and considerable learning and experience could potentially be achieved etc.

The researchers Nwakanma, *et al.* (2013, p.135-136) stated the determined variable, IT-Project implementation success, it is suggestion that in information and communication technology professionals have to take for granted project management related skills and methods. It is concluded that information technology specialists backed with the 'required' level of project management skill and knowledge that helps to attain a reasonable project schedule, on the top of achieving top management's support.

Based on their survey study result, Nwakanma, (2013, p.135-136) and his fellow researchers, suggested that organisations ought to begin employing project management technology professionals in order to get well managed their important IT project rather than assuming that 'every graduate' can design/plan. Similarly, by the above researchers, it is advised that realistic schedule is a decisive one to achieve organizational change

related agenda and using the necessary project management tools and techniques and expert's skill in their respective project area at different level of decision making advised to be critical in attaining development objectives and This study will analyze the conditions of some commercial banks in Nigeria in terms of deployment and utilization of ICT in their operations and also the effects of ICT facilities on their operations.

The Authors, Nwakanma, *et al.* (2013, p.128) based on their econometric model result in searching for major factors that determined Information Technology (IT) project execution doing well in Nigeria, from their study's result, six (6) major factors were identified (these are: clear requirements and specification, clear objective and goal, realistic schedule, effective project management methods/skills, support from top management and user/client involvement) found to have a significant combined impact. As noticed from the estimated model, the above determinant factors were found to represent for 62.9% explanatory power or impact on the above same IT-Projects in the country. Whereas, from the same above author's further analysis, it is found that the highest decisive determining factor is reasonable schedule. On the other extreme the lowest impact of all variables went to the impact related to having clear objective and goals. Whereas, ibid, *et al.* (2013, p.134) put Realistic Schedule, effective use of project management skill/methodology, support from top management, user/client involvement, clear requirements and specification, clear objective and goals in terms their rank or importance towards successful IT project implementation, respectively.

As per the research conducted recently by Fayaz, *et al.* (2017, p.75-78) on looking at a determinant CSFs in IT Projects in the case of Pakistan through employing multiple ordinary least square (OLS) estimation technique followed by stepwise regression method that was considered or aims purposefully to minimize multicolinearity related statistical or econometric analysis difficulty in their study. The same study tried to indentify fifteen explanatory variables (the loadings) (*namely*: Management support; leadership qualities; Budget support; Right team; teamwork; effective communication; effective monitoring and controlling; requirement specification; project duration; clear project implementation goal; project progress schedule; team capability; and risk management) or were assumed after similar researches that were previously done by

various researchers as determining factors that were found to have significant impact on the dependent variable, i.e. IT projects execution success. Then, the above same authors analyzed the effect of the above independent variables on IT-project success. Thus, their study revealed that the *explanatory variables*, such as qualities in leadership and attaining the support on the required resource access by top managements**,** effective communication**,** having experienced project team members was found to have a strong and significant effect on the dependent variable. But, Support of Top Management as a whole was not found a key CSF to IT Project implementation doing well in Pakistan. Besides to the above questionnaire based survey study results, additional study results were found through interview data collection technique based on the response of 80 IT specialists and other concerned stakeholders. Accordingly, based on their findings, the above same authors were able to conclude that management support**,** leadership**,** budget support**,** right team**,** successful teamwork**,** effective communication**,** effective monitoring and controlling**,** requirement specification**,** project duration**,** a clear goal**,** project progress schedule**,** team capability and risk management were observed to be important for the successful execution of information technology projects.

As identified by Nah, *et al*. (2001, p.294) there are eleven (11) CSFs for enterprise systems project implementation. These are:

1) Enterprise systems team work and composition
2) Top management support
3) Business plan and vision
4) Effective communication
5) Good project management
6) Project champion
7) Appropriate business and legacy systems
8) Change management program and culture
9) Business process reengineering and minimum customization
10) Software development, test and trouble shouting
11) Monitoring and evaluation of performance

Table (1): Review of Successful IS/IT Project Implementation in three organizations in Ethiopia: the case of ERP System

Author(s)	Title	Objective	Methods /Approaches	Key Findings	Recommendation & Future Work
Abiot Sinamo Boltena and Jorge Marx Gomez (2012)	A Successful ERP Implementation in an Ethiopian Company: A case study of Implementation in Mesfine Industrial Engineering Pvt. Ltd	Examines key dimensions of ERP implementation issues with in the case company by focusing on business, technical as well as cultural issues.	Case Study with Interview as the main source of data collection used	Presents experiences of a successful ERP implementation projects based on the investigated case study.	Recommended to consider post-implementation period for sustaining the effectiveness of ERP implementation.
Derese Agonafir (2012)	Ensuring Successful Implementation of Enterprise Resource Planning (ERP): The Case of Ethio-Telecom	To develop/ design a framework to address factors for ensuring successful implementation of ERP in organizations.	A case study with semi-structured interview as the main source of data collection used.	A framework proposed on critical factors that need to be focused on each phase of ERP implementation.	Additional case study research on other business sectors recommended for further reinforcing the results.
Sintayehu Demeke (2014)	Critical Success Factors for Implementation of Enterprise Resource Planning Systems: The Case of Ethiopian Airlines	To find out the factors that determines the success of ERP implementation.	A case study with questioner as the main source of data collection used.	Twenty critical success factors of ERP implementation are identified.	Recommended to study ROI of ERP system adoption and usage for better use of already implemented ERP systems.

2.5. Contextual Definitions of the Variables (the Loadings)

Here, it is tried to discuss various research articles *summaries* after thoroughly reviewing them and own constructed contextual definitions of both the dependent variable and carefully selected independent variables (the loadings) of the Study. Thus, and put the following are summarized versions of the dependent variable and twenty two (22) the variables (the loadings) from their respective empirical studies and a priori project theories that are considered as a CSFs or are reviewed as critical to IT projects execution to be successful. These are the followings:

1) ***IT Project Implementation Success:*** As per Hong and Kim, (2002) *implementation success* implies the extent of project goal variation against anticipated implementation budget, project schedule, system performance and benefits. Yet, there is a condition where projects are assumed as successful projects, while these projects failed to meet some of and even all of the

factors (Lewis, 2001). Thus, the contextual meaning of successfully executed IT project is an IS/IT system project that is already touched the ground and started a successful operation after passing through all challenges during the adoption process. And yet, IT system project implementers are expected to provide considerable effort to accomplish their project targets within the allocated projected cost, schedule, and expected quality.

2) ***Top Management Support:*** This is the most commonly cited factor when implementing complex IT systems. The importance of this factor can be seen from the following findings in the study (Biehl, 2007, p.52-58).

- Among eight failed projects studied, six were not assumed pressing by the top management and they were not got enough places in the eyes of senior executives. Whereas, four of the project failure experiences were there due to top executives were not understood the particulars of the projects and also suspended approvals. Another one of the failed projects was poorly supported and poorly understood by top management, the progress was stopped halfway due to poor short-term results.
- Top management supported and approved global and local projects and assists their middle level managers etc.

As per the findings of Al-Sabaawi, (2015, p.496-506) support from top management is found to or identified as main CSF. Since most of IT project execution decision are initiated at a strategic level and as a result are a top-down of its kind dedication and support of process owners an organization is essential to get an ERP project well done (Yingjie, 2005). Senior executive's assistance on giving the required project inputs and power to the project and its dedicated team always recognized as a key CSF for ERP System project execution to be doing well. Using other terms, this key CSF has two key aspects. One is about giving lucid direction and/or leadership, and the other is regards providing all the required resources or inputs for ERP system project execution. Given the fact that adopting projects are strategic initiatives, top management required to be lively on supporting them. Their explanation as to how the up-to-date IT system going to assist organizational goals, IT projects, such as, a CRM initiative will not be achieved or remain vogue (Oracle, 2006, p.5).

As stated by Fortune, and White, (2006, p.53-65) top management support is a factor that can be affected by the general state of the economy; a lack of this factor can lead to project failure.

In their research it was found that in the successful project the Project Board (i.e. the Top Management) supported the project managers actively and held weekly meetings. However, in the failed project there was no evidence of the top management supporting the lower management. Top Management Support is one of the most important factors for success of IS/IT projects. This factor is important for ensuring a long-term business vision, top-level interaction among users, and IS departments to facilitate successful implementation. It was found out that greater the top management support, greater is the chance of success for the project (Lee and Kim, 2007, p.1853-1880; Poon and Wagner, 2001, p.393-418). Salmeron and Herrero, (2005, p.1-12) said that the need of top management support in an enterprise is to authorize and persuade the major issues regards to the successful execution IT projects their subordinates and other stakeholders. From their investigation they found out that *Top Management Support* is the third most important CSFs for IT projects. Similarly, Sudhakar, (2012, p.537-558) stated that *Top Management Support* is one of the most important critical success factors.

Financial Support - IT projects require significant financial resources that affect firm operations (Biehl, 2007, p.52-58). As per their finding, for global IS/IT projects strong financial support is mandatory. Besides it is observed to be materialized through *Top Management Support a*s their budget approval is obviously needed.

3) ***Project Leadership:*** as stated within the research work by Biehl, (2007, p.52-58) gaps in leadership leads the IS/IT project execution process to consume longer period than time estimated, i.e. project slippage. As Fortune, and White (2006, p.53-65) based on their research done on two information system projects they found that charismatic leadership/management is imperative for the above projects doing well. The study done on thirty six businesses found that success in leadership area of the IT project revealed as one of a key CSFs in Australia (Sudhakar, 2012, p.537-558). As per the study done by McLeod and MacDonell (2011, p.24) to handle the project properly the project leaders ought to have both good technical and management/soft skills. To this end, somebody must be assigned as a project leader be supposed to be “champion” the project in an enterprise. Besides, transformational leadership is needed to manage change resistant behaviors and resolve conflicts. It is critical to enterprise system project implementation do well (Nah, *et al.* 2001, p.292).

4) ***Team Work, Composition, and Capability:*** the research done by Biehl, (2007, p.52-58) revealed that *cross-functional* team and cooperation between members of team and describes it as a critical success factor for IT projects. Similarly, lessons were also obtained from other researchers study conclusions in the area that teamwork is CSF of IT project (Fan, 2010; McLeod and MacDonell, 2011, p.24; and Sudhakar, 2012, p.537-558).

As it is declared by Nah, *et al.* (2001, p.289) based on enterprise system implementation project, it is a great concern to construct a cross functional team; and mix of best personnel, i.e. internal organization staff members and consultants. This helps internal staffs to develop their technical skills at the necessary level, besides to their previous deep knowhow regards to the business processes and/or functions. From the case study done on four banks regards to their respective IT project implementers on the issue of the diverse nature project team members found to be including a combination of business related education back ground, IT professionals, and implementation partners with a direct supervision of the project manager (Schierholz, *et al.* 2004, p.461).

Select Right Team - as per Reel, (1999, p.18-23) it is a necessity to construct the right project team and having appropriate project personnel within the team and it is found to be a CSF to IT projects to be successful. The research study done by Sudhakar, (2012, p.537-558) indicated right team as a CSF of IT project. As per Fan, (2010) the project team is responsible for the strength of the project and it is important to get a suitable blend of professionals.

Team Capability - In accordance with the study done by Fortune, and White (2006, p.53-65) the importance of a well-qualified team was found to be one of a critical determinant factor to be considered. As it was observed from one another project the project manager and assigned or appointed subordinates found to have no previous project experience. Whereas, merely one of member of the team had IT qualification, it wasn't a surprise to observe that this project had failed. As per Biehl, (2007, p.52-58) doing on global based IT projects was found to be one of key CSFs to build project team member capability. It is suggested by Salmeron and Herrero, (2005, p.1-12) that personnel working at information system project execution expected to have holistic capabilities. The team must be *composed* of technical and functional knowledge and skills in an organization. That is why such knowledge and skills composition requirement is already considered as one of CSFs in IS/IT project implementation. In the work

of Sudhakar, 2012, p.537-558; Fan, 2010; and Poon and Wagner, 2001, p.393-418, team capability is mentioned as one of the key factors of IT project success. The *team capability* has been found to have highest impact on the successfully implemented up-to-date IT project (McLeod and MacDonell, 2011, p.24).

5) ***Clear Business Vision and Plan/Goals and Objectives:*** understandable and distinct goals are important CSFs for an IT project doing well (Biehl, 2007, p.52-58; McLeod and MacDonell, 2011, p.24; and Poon and Wagner, 2001, p.393-418). According to Fortune, and White, (2006, p.53-65) clear and realistic objective is critical for the project doing well and it is among the three most cited CSFs. On the other hand, the failed project that had clear goals but only at the senior level but observed to be not successfully cascaded towards the lower/middle level management etc. A study by Sudhakar, (2012, p.537-558) stated that clear project objective and/goals among the top five critical success factors for IT project. In a successful IT project customer are very much concerned about the goals and there is a sense of responsibility about the goals from the whole team (Fan, 2010). The goals are set in accordance with the requirements of the customer (Ding, and Wang, 2008).

   The business must have clear visions and business plan for ERP project. It is very important to identify a *goal* before implement ERP project. *Business plan* reflect a long term vision. Clear vision and mission provide the guideline for ERP implementation stated that one of the biggest problems ERP project leaders face comes not from the implementation itself, but from expectations of board members, senior staff, and other key stakeholders. It is important to set the goals of the project before even seeking top management support. Many ERP implementations have failed as a result of lacking clear plans (Al-Sabaawi, 2015, p.496-506).

   Establishing Measurable Business Goals is critically important to define the specific business benefits that you expect your CRM project to deliver. This might sound obvious, but many projects fail because this “obvious” success factor is not observed (Oracle, 2006, p.3).

6) ***Effective Communication:*** This helps stakeholders to recognize the project objectives/goals and help to inform that they accountable regards to their respective job roles (Biehl, 2007, p.52-58; McLeod and MacDonell, 2011, p.24; Fan, 2010; and Ding, and Wang, 2008). Fortune, and White, (2006, p.53-65) mentioned that that the successful project had a strong

communication system among the project top leaders and its managers and as well among project managers and his/her subordinates. As per the study by Sudhakar, (2012, p.537-558) communication is determined as one of the critical success factors. The above researcher suggested: Communication is expected to be clear and well defined; straight-forwarded; there must be sufficient communication channels to be used. Strong communication within the entire sections of an organization during the implementation process increases success for ERP implementation. It allows the organization's stakeholders to understand the goal and the expected benefits of the project as well as to share the progress of IT project. Clearly open information strategy cares for the different communication failures within the project (Al-Sabaawi, 2015, p.496-506).

7) ***System Quality:*** it is worth mentioning what's said by Shin and Lee, (1996) regards to system related quality requirements that successfully executed IS/IT project's can be characterized. As the above researchers, Shin and Lee, tried to mention the followings are important factors to be considered related to system quality in IT system implementation. These are: operational reliability, functional reliability, user friendliness, integrity, correctness, usefulness, understandability, efficiency, testability, maintainability, and flexibility.

8) ***Proper and Adequate Training:*** As said by Leyh, (2016, p.10) insufficient or lack of end user training is one of a major reason for disappointments of poor implementation of new software. As stated by Fortune, and White, 2006, p.53-65, in the successful project adequate Staff or user training was conduct, besides to availing proper user's manual/guideline. As per Biehl, (2007, p.52-58) training ought to be conducted for managers, staff and end-users for the success of the IT project. The work of McLeod and MacDonell, (2011, p.24) indicate the significance of user training in particular to long-term project achievement. Training is also found to have a significant effect, as it helps users to be more confident about the IT system and consequently, it influences individuals' attitudes about the project. User Training and Education is found to be vital when the ERP system is up and running it is very important that the users be capable to use it, hence they should be aware of the ERP logic and concepts and should be familiar with the system's features. As it is tried to mention by Yingjie, (2005) and Jafari, *et al.* (2006) that there are three aspects concerning the contents of training are: Logic and concept of ERP, Features of the ERP system software, and Hands-on training. Training

could be formal or informal and it consist of every actions planned to improve the competencies of the project staffs and can be achieved through employing various techniques that may incorporates such as classroom, online, computer-based, on-the-job training, mentoring, and coaching etc. This aims to equip with any compulsory management/leadership and technical knowledge and skills. Scheduled training takes place as stated in the human resource management plan. Additional training could be needed and given by in-house or external trainers owing to project controlling process the project team to address additional skills could also be helpful for upcoming and/or similar projects (PMBOK Guide, 2013, p.275). Early provision of sufficient training is critical to achieve well in your CRM project implementation. Whereas, end users training expected to involve change management as focal point (Oracle, 2006, p.8).

As per Schierholz, (2004, p.461) variety of skills needed by the staff members has been changing, especially regards to the team members from IT area. Skill related inadequacies were majorly tackled by internal training programs. Because of higher market demand for those personnel who have skills and experience in standard software implementation, Bank's have to expect a brain drain. However, the impact on human resources management was regarded as positive because most of the banks assumed it would be easier to acquire new IT employees with standard software skills than employees with skills in their *legacy* systems. To ensure that the required IT skills are available in the long term, all banks have introduced new objectives and new career paths for their IT personnel. In the business units, intensive training has also addressed the new skill requirements. All the banks successfully employed key-user concepts for employee training. As key-users, the business units' employees were involved in the project at an early stage and played an important role in disseminating information on the project and on the use of the new software modules.

9) ***Project Progress Schedule:*** as per the research conducted by Sudhakar, (2012, p.537-558) taking more time than the scheduled time is one of the main reasons for IT projects to be gone wrong. It is also mentioned that meeting project success means meeting project schedule. The project schedule must be practical or reasonable to be attained and finished on the right schedule. Unlike the above findings, project schedule is found to be less observed as key

determinant factors determinant factor and perhaps have lesser impact on IT project success (Al-Sabaawi, 2015, p.496-506).

As per Schierholz, *et al.* **(**2004, p.461) respect of the project plan, unlike one of the project, from the other three project cases it is observed to have a high degree of *parallelization* that aimed to enhance IT projects execution related activities by the respective project teams of each Banks and consequently intended reduce project implementation duration. Use a Phased Rollout Schedule - Most successful CRM projects follow a rolling wave schedule type. Each successive phase controls the work and experience from prior phases to produce a "quick win" that is, significant outcome with a period of 3-4 months (Oracle, 2006, p.8-10).

10) ***User Involvement:*** It had been initially hypothesized by Lee and Kim, (2007, p.1853-80) that user's participation is directly related to the successful implementation of IS/IT projects. But, as it is found based on their final survey result, the above researchers found that it was not been a significant determinant of IT project success. Whereas, the research done by Salmeron, and Herrero, (2005, p.1-12) tells us that many IS projects fail due to their inability to meet user expectations. Besides, user's interaction helps in better understanding of the systems and also helps in improving acceptance from users as they get to know the systems capabilities more clearly. In their research Sudhakar, (2012, p.537-558), Fan, (2010), and Poon and Wagner, (2001, p.393-418) have highlighted the importance of customer involvement as a critical success factor for successful execution of an IT projects. As organizations intend to set up of our e-business applications, end users participation is essential for project implementation doing well (Oracle, 2006, p.7-8).

11) ***Risk Management:*** In successful projects risk analysis was done at the start of the project and risks that arose were handled successfully, whereas in the failed project no risk analysis was done (Fortune, and White, 2006, p.53-65). As per Ding, and Wang, (2008) risks arise as the stakeholders of the project are failed to consider their responsibilities critically. Active risk management helps to decrease and even to avoid risks. According to Fan, (2010) IT risk management can be done from an organization, people and procedure views.

12) ***Effective Monitoring and Control:*** Adequate monitoring and control is important for the quality of the project. Successful projects always have some mechanism for this (Fortune, and

White, 2006, p.53-65). Effective control can help in reducing the planned time and can also help in reducing ambiguity (Ding, and Wang, 2008). According to Fan, (2010) project controlling and monitoring should be done on all stages of the project. Monitoring and control should be proactive, i.e. must be used to prevent incidents and provide regular feedback. A research conducted by Sudhakar, (2012, p.537-558) defined this as one the critical success factors. Measure, monitor, and track is advised that as the management system is in go live stage, responsible personnel of a business have to evaluate, examine, and track its effectiveness,. The purpose of all this is to incessantly enhancing project execution performance (Oracle, 2006, p.10).

13) ***Change Management:*** Role of Change Management are Change the dynamics of the organization to ensure the new system succeeds by ensuring there is readiness to the demands of a very hard taskmaster, Educate users in current industry best practices and vigorously train them in the technical uses of the system, An ERP implementation project is a long and arduous endeavor. Sporadic and unfocused commitment to the project can doom it (Al-Sabaawi, 2015, p.496-506).

14) ***Processes and Sub-processes (Stakeholders) Participation:*** all through the project execution stage various stakeholders of an organization involved such as consultants and software and hardware vendors. This aims to achieve planned/defined implementation targets with a sufficient corporation among each stakeholder at stake (Al-Sabaawi, 2015, p.496-506).

    At the early stage of project implementation involvement the business units' observed to be a main critical success factor and assumed by all the banks. On the other side, so as to decrease the possible project associated risks and complexity; all the banks used a step-by-step advance related to the execution of core banking modules (Schierholz*, et al.* 2004, p.461).

15) ***Technological Infrastructure:*** it is argued that adequate IT infrastructure, hardware and networking are crucial for an ERP system's success amid to a need for careful choice of an ERP package that best matches the *legacy systems* (such as, the *hardware platform*, *databases* and *operating systems*). It is clear that ERP implementation involves a *complex* transition from *legacy* information systems and business processes to an integrated *IT infrastructure* and *common business process* throughout the organization. Hardware selection is driven by the

firm's choice of an ERP software package (Al-Sabaawi, 2015, p.496-506). The above same researcher added that the ERP software vendor generally certifies which hardware (and hardware *configuration*s) must be used to run the ERP system. This factor has been considered critical by the practitioners and as well as by the researchers.

16) ***Project Management*****:** as per Al-Sabaawi, (2015) Project Management involves the use of skills and knowledge in organizing the scheduling and monitoring of defined activities to make sure that the objectives of execution projects are realized. The official project execution plan defines project actions, assigns team members to those tasks, and encourages organizational support by managing the execution process. As per Nah, *et al.* (2001, p.292) *good project management* is vital and its success needs an highly associated effort of human resource development and human resource management processes. Besides, projects needs to be well-defined based on its milestones, planned with a reasonable implementation deadline. This help project execution effort to meet its planned schedule, budget, and to achieve reliability etc.

    As stated in PMBOK Guide, (2013, p.560) the Executing Process Group (EPG) consists of those processes performed to complete the work defined in the Project Management Plan (PMP) to best suit the project specifications. Here, the EPG consist coordinating people and resources, managing stakeholder expectations, over and above integrating and performing the project tasks in line with the PMP. At execution phase, results may engage planning updates and rebaselining. This may include changes to expected activity durations, changes in resource productivity and availability, and unanticipated risks. Such variances may affect the PMP and may require detailed analysis and development of appropriate project management responses. The results of the analysis can prompt change requests that, if approved, may modify the PMP or additional documents and possibly need to launch latest baselines. The lion share of the project's funds will be spent in performing the courses of activities in the EPG (*Ibid*, 2013, p.56).

17) ***Use Trained and Experienced Consultants:*** Referring to the words of the Vice President of Envoy Corporation Jim McPeak, Oracle, (2006) "When you use certified consultants, you know you're working with people who understand the software inside and out. Certified consultants are able to translate business requirements into software configurations far more

effectively than noncertified consultants. They can also provide a much more realistic forecast of what your CRM project will entail in terms of time and resource requirements.**"** Software consultants frequently make bold claims regarding their ability to meet a company's implementation requirements (Oracle, 2006, p.7).

18) ***Align Business with IT Legacy System:*** the criteria of achieving good alignment between business processes and IT is crucial for successfully adopting IS software based organizational system. On the other side, an organization must be ready to any significant changes needed in its existing business processes/functions to realize success in its software project execution targets with a least customization. To this end, process modeling tools can assist to customize business processes without altering software code (Holland, *et al.* 1999, p.273-297). The ultimate objective of adopting an IT project successfully, including CRM, is to enhance your client oriented business processes through technology. And, it will be achieved by creating operational structures that reinforce it. To put this in short, while you are planning to get your business and IT together, it is advisable to assume business as the driver of all (Oracle, 2006, p.4). Besides, *ibid*, (2006, p.6) stated that minimizing customization through leveraging out-of-the-box functionality is essential. It is due to the fact that, over-customization is one of the most common causes of cost overruns and under schedule in CRM implementations.

Just as a CRM project must be driven by business goals, so must every *configuration* decision. If a feature does not directly help your company better serve customers, you probably don't need it. Acceptable solutions must improve profitability, enhance customer value, support process integration, reduce technology costs, and improve systems performance (Oracle, 2006, p.4-5).

Appropriate Business and Legacy Systems: it is essential at the early chartering phase of the project. Here, a stable and successful business setting is vital. Business and IT systems requires to take in to consideration organization's prevailing processes/functions, organizational structure, culture, and information technology. The other key issue to look options closely related to system functionality and approach to connect the new enterprise system to legacy system (Nah, *et al.* 2001, p.294). Whereas, lack of appropriate data (clean data) will remain be a challenge to IT project implementation activities.

19) ***Information Systems Adjustment:*** Enterprise systems implementers' frequently challenged regards the level of customization needed. While packaged or standard applications found to be cost effective, they may not be fit for a distinctive business process (Jessup and Valacich, 2008).

20) ***Business Process Adjustment:*** several organizations cannot successfully incorporate Web-technologies into their e-business initiatives because transformation resulted from adopting technological system doesn't match the resultant existing business processes change. If an enterprise system is incapable to restructure its business processes to address organizational requirements, it may disturb the prevailing normal business operations (Chatterjee and Segars, 2006, p.275-295).

21) ***Organizational Fit-Data Fit*:** it has two major groups. These are ***business process fit*** and the ***data fit***. The *organizational fit* is a significant prerequisite for IS/IT project execution to be successful. The latest systems bring changes to the dynamics of an organization, consequently it needs to adjust itself so as to successfully implementing the latest one (Hikmet *et al*. 2008, p.1-9; Kanellis *et al*. 1999, p.65-76; and Tyre and Orlikowski, 1994, p.98-118). As stated by Hong and Kim, (2002) organizational fit is about the extent of alignment between IT system project and organization needs related to data, process and user interface. The fact that the *organizational fit* of an enterprise system ought to be checked mostly ahead of taking grants of its implementation. Yet, enterprise system producers strive to produce blind assurance regards to their enterprise system package even if the *organizational fit* is significantly lower. Thus, proper choice or selection of an enterprise resource system in alignment to specific organizational fit, for instance size of the organization or industry sector, is essential (Leyh, 2016, p.10).

Process Quality: it must be supervised or watched from the beginning or early stage of the project implementation task and quality related set of principles and potential has to found (Reel, 1999, p.18-23). The logic here is that it is not possible to reverse business process to append quality. And, due to the fact it is difficult or impossible to modify or improve the process quality later during project execution; project quality has been considered as CSFs to IT projects. The study done by Sudhakar, (2012, p.537-558) also sated the same to the above that quality control is a significant success factor for IT projects. Project Quality is found to be

less observed as key determinant factors and possibly have lesser impact on IT project success (Al-Sabaawi, 2015, p.496-506).

Business Process Fit-Data Fit: This frequently mentioned success factors generates the misfit of the business process and restricting the potential of systems in smaller enterprises include unbalanced power relationships, insufficient assimilation of internal business processes and information, restricted flexibility of internal business processes, and the lack of IT sophistication (Seethamraju, 2008, p.1-7)

The data misfit remains be a major source of several international enterprise systems adoption failure. Among others, project management problems include communication, quality and integration problems, are the most expected ones to happen amid to data misfit problem exists. Improving the data fit can increase the possibility of IS/IT project implementation outcomes (Xue, *et al*. 2005, p.279-295).

22) ***Work Environment and Facility:*** That is as organization's senior executives are expected to be in-charge of facilitating sufficient resources accessibility, i.e. all the required resources, this includes office equipments to the successful execution process of IS/IT projects in Malaysia (Aziz, *et al*. 2012, p.1-8).

The author Leyh, (2016, p.17) tried to identify thirty one (31) CSFs and sorted out each as strategic and tactical factors. *Tactical* CSFs (these are about to short-term aspects and goals of the system implementation project itself) or *Strategic* CSFs (these are about towards long-term influences of tasks that have higher associations to the organizational development agenda, i.e. in relation to addressing it mission, vision and core competencies of the business activity). After categorizing all of the CSFs as strategic and tactical, the above researcher then segregates each of the strategic and tactical CSFs as organizational and technological factors. In relation to the later classification, the specificity and importance/impact of technological factors are strongly dependent on the IT systems themselves. While, *organizational factors* focus on *corporate culture* and its *environment* with its specific *processes* and *structures*. The same above researcher, Leyh, (2016, p.18) categorizing and then accordingly classify all of the critical success factors in his research article as put in the following table (2).

Table (2): Categorization of Critical Success Factors (CSFs) (Model tailored from Leyh, 2016, p.18).

Factors	*Strategic Success Factors*	*Tactical Success Factors*
Organizational Related CSFs	Balanced project team	Project management
	Change management	Communication
	Clear goals and objectives	User training
	Top management support and involvement	Monitoring/measurement of performance
	Use of a steering committee	External consultants
	Company's strategy/strategy fit	Skills, knowledge and expertise
	Available resources	Troubleshooting
	Project team leadership/empowered decision makers	Interdepartmental cooperation
	ERP system acceptance/resistance	
	Involvement of end-users and stakeholders	
	Organizational culture	
	Vendor relationship and support	
	Project champion	
	Environment	
	Knowledge management	
	Business process reengineering	
	Organizational structure	
Technological Related CSFs	Organizational fit of the ERP system	ERP system tests
	ERP system configuration	Data accuracy
		Vendor's tools and implementation methods
		IT structure and legacy systems

Source: Leyh, (2016, p.18).

An in-depth review was also done by Jenko and Roblek, (2016, p.148) these authors was able to identify largely sited Critical Success Factors to ERP System execution during the last decade and clustered into three core factor groups. These are: Human, Organizational, and Technical. Accordingly, the above authors were able to identify the following CSFs under each of the above three groups as follows.

a) Primary Human Factors

- Competence
- Behavior
- Communication
- team composition

➢ Whereas, additionally identified human related CSFs were the following

- Project team capability and team work
- Knowledge transfer/management
- Learning cycle (team and organization)
- Spiral continuous improvement
- Top management support and commitment
- Clear goals and objectives
- Interdepartmental cooperation/conflicts
- Interdepartmental communication
- ERP implementation project management
- Management of expectations
- Adequate ERP Package and Consultant Company selection
- Adequate project constraints planning

•Adequate end user training
•Adequate education on new business processes
•ERP implementation quality management
•ERP implementation risk management
•Adequate human resources
•Recruit and retain human resources
•Empowered decision makers
•Reducing the user's resistance
•Focus on user requirements
•Unclear development requirements
•Capable project manager
•Senior project champion
•Professional steering committee
•Minimal customization decision
•Use of consultants' decision
•Political structure/conflicts
•National culture

b) Organizational CSFs

- Organizational culture
- Team member's availability
- Sufficient human resources
- Formalized /effective project methodology
- Formalized project plan/schedule
- Organizational fit for ERP system (structure and processes)
- Vendor support
- Alignment between business and IT strategies
- Adequate process of change management/commitment
- Adequate business process redesign
- Integration of business planning with ERP planning
- Vendor/Consultant/Customer partnership

c) Technical CSFs

- IT infrastructure/stability
- ERP architecture and quality
- ERP advanced technology
- ERP implementation strategy
- Data analysis and conversion
- Data and information quality
- Suitable IT legacy systems
- Integration between enterprise wide-systems
- Software management methodology
- Use of vendor's tools
- Ease of system's use

As per Hirsimäki, 2017, p.16, citing CSFs merely cannot help corporations sufficiently regards to their relevance to successful IS/IT systems implementation, rather the necessary effort has to be made to explore or identify the most referenced CSFs under different categories or dimensions of CSFs. As stated by (Hirsimäki, 2017, p.16-18) the ***organizational dimension*** of the CSFs of BI system implementation incorporates *vision and business case related factors*, strategy and culture management and championship, committed management support and sponsorship, and understanding of culture related factors. Whereas, the ***process dimension*** involves factors related to the team, project management, and change management, appropriate team skills, user-oriented change

management, and user training and support. The same above author said that project management related factors and post-implementation related processes and business-driven development approach and implementation strategies are all can be considered in this process dimension (ibid, 2017, p.18-19). The *last category* of CSFs is ***technological dimension*** of the above same IT system execution includes data and infrastructure related factors, and more specifically sustainable data quality, accuracy and integrity; understanding the firms needs requirements and processes, business-driven, scalable and flexible technical framework. It is also observed to involve factors associated with the above two categories or dimensions were closely related to the previously mentioned, such as effective data management, and suitability of technologies and infrastructure (ibid, 2017, p.19-20).

At this juncture, for the purpose of this research, it is tried to categorize pre-identified critical success factors (CSFs) the way that was almost used by Leyh, (2016, p.17) and Jenko and Roblek, (2016, p.148). To have the best of the above researcher's idea in this regard, for instance, it is great to sort out each CSF as strategic and tactical factors for both Organizational and Technical groups of factors as it can be observed from the work of Leyh. While, it was a great job too to cluster each CSF as into three core factor groups, i.e. Human, Organizational, and Technical. This aims to identify the position of human related factors as these are inalienably an important resource above all determinant factors than the rest of other factor groups. These are the main reasons of having some level of modification from the above researcher's approaches of grouping factors. (here the word/phrase, pre-identified CSFs refers to IT project implementation success factors that have been identified from previous similar empirical research's/study's journal articles and books done elsewhere around the globe). Thus, based on the lists of Critical Success Factors (CSFs) that have been identified from a priori empirical studies review, it is tried to put them as put in the following three by two matrix form.

Table (3): Categorization of Critical Success Factors (CSFs) to IT Project Implementation (Before Project Work Survey Instrument's Cronbach's Alpha Reliability Test Conducted)

Dimensions	***Strategic Success Factors***	***Tactical Success Factors***
Human Related CSFs	Project Leadership	Risk Management
	Top management support	Proper and Adequate Training
		Team Work, Composition, & Capability
Organizational Related CSFs	Clear Business Vision and Plan/Goals and Objectives	Project management
	Change Management (Organizational Resistance)	Effective Communication
	Processes and Sub-processes (Stakeholders) Participation	Use Trained and Experienced Consultants
	User Involvement	Effective Monitoring and Control
	Business Process Adjustment	Project Progress Schedule
	Work Environment and Facility	
	Business Process Fit: Data Fit	
Technological Related CSFs	Organizational fit: Data Fit	Align Business with IT Legacy System
	System Quality	
	Technological Infrastructure	
	Information Systems Adjustment	

Source: Own Construct based on models of Leyh, (2016, p.18) and Jenko and Roblek, (2016, p.148).

Table (4): Categorization of Critical Success Factors (CSFs) to IS/IT Project Implementation (After Project Work Survey Instrument's Cronbach's Alpha Reliability Test Conducted)

Dimensions	***Critical Success Factors***
Human Related CSFs (Human_CSFs)	Project Leadership
	Top management support
	Risk Management
	Proper and Adequate Training
	Team Work, Composition, and Capability
Organizational Related CSFs (Organizational_CSFs)	Clear Business Vision and Plan/Goals and Objectives
	Change Management (Organizational Resistance)
	Processes and Sub-processes (Stakeholders) Participation
	User Involvement
	Business Process Adjustment
	Work Environment and Facility
	Business Process Fit: Data Fit
	Effective Communication
	Effective Monitoring and Control
Technological Related CSFs (Technological_CSFs)	Organizational fit: Data Fit
	System Quality
	Technological Infrastructure
	Information Systems Adjustment

Source: Own Construct based on a model tailored from Jenko and Roblek, (2016, p.148).

2.5. Conceptual Framework

The Commercial Bank of Ethiopia (CBE) has a vision to become World Class Commercial Bank by the year 2025, in alignment to Ethiopia's aspiration to become a middle income earning country by the same year. In order to be a World Class Commercial Bank it is the most critical factor or an indisputable fact to consider the necessary precondition to equip itself with state-of-the-art technologies (such as, adopting various properly selected Information Technology projects). As it helps to both achieve and exceed its ultimate business targets under its financial intermediation activities. In the prevailing competitive global financial business arena, among other factors that forces organizations is to change and improve ways of doing (service excellence), most importantly to satisfy and retain their dear customers, and is to sustain their business growth or to stay profitable.Besides, Aziz, *et al.* (2012, p.1) stated that for an organization performing its business in this competitive business environment information technology/information system is already considered as critical tools. The above same researchers conclude that it is a main issue to get an IS/IT execution processes right or doing well organization. In the currently IS/IT system based business environment, the banking sector all in all and commercial banks in particular, cannot afford to stay behind in the most changing business environment. That is, in terms responding a call for improving business's operational processes.

Thus, it is reasonably enough to make a kind of explanatory study and as a result identify an individual or combination of key factors that helps various IT-projects' execution related endeavors are well done. This could be materialized if and only if critical success factors are properly identified. In consistent with all the above calls, besides to an effort of adopting a world class IS/IT related up-to-date technologies within an organization, the authors Nwakanma, *et al*. (2013, p.130) stated that to realize success in project implementation activities it is significant to have a realistic schedule and achieve proper monitoring so as to be conscious of the early warning signals and managing them both efficiently and effectively. Such strategic initiative moves by any Commercial Banks aims to ultimately see where new technology can be used to improve customer service and satisfaction and assist its business growth in a continuous basis.

In our day, attributable to fast advancement more than ever in IT industry, organizations have enormously acknowledged the significance of execution of IT projects in alignment to their respective business needs. IS/IT project management often encounter many issues, such as rapid technological improvement, too dynamic business situation and ongoing changes in individuals interest. Accordingly, reviewing and searching for key or critical success factors is already has been considered as means of enhancing and institutionalizing an information technology based projects (Imtiaz, *et al.* 2013, p.3154-58). As stated by the above fellow researchers, joint understanding of project management as well as information technology issues throughout the execution of enterprise system based IT-projects is too critical for achievement of these projects. The success of such projects believed to be having well identified critical success factors (CSFs) among various determining factors already known to be critical based on numerous empirical research studies all over the world. Yet, such preliminary studies results are merely not assure whether similar identified CSFs are similarly affect the successful execution of IT project everywhere. This is the reason behind and the starting point where the interest of this research is stem to search for CSFs that matters most, of-course at different level base on various factors for different organizations, in relation with the process of successful IT project execution.

To this end, it is worthy to mention that this research is believed to assist decision makers at Commercial Bank of Ethiopia (CBE) in relation to its future new or expansionary IS/IT project implementations and other interested organizations have similar plan to do. This is as this project work findings will keep various decision makers and implementers work at different level informed regards to what mattered most to get the possible future IS/IT system implementation related projects doing well or be successful. This is important given the fact that ICT or IS/IT system projects are one of the most costly investment decisions and one of a very few major strategic dimensions to giant service providers (including the Bank, CBE) and other similar organizations, and similarly getting them implemented is majorly a challenging task by itself. The purpose of this project work is to discover the CSFs for sound IT projects implementation process in terms of their empirical importance is the right decision. That is as various concerned stakeholders, including project manager/leader in CBE can employ these factors to meet their IT project implementation objectives.

CHAPTER THREE

3. Research Methodology

3.1. Data Types, Sources and Size

Exploratory study majorly consists of the objectives of formulating problems more precisely, clarifying concepts, gathering explanations, gaining insights, eliminating ideas and formulating hypothesis. Exploratory research here is done by a survey. A quantitative survey based approach was employed (Ganesh and Mehta, 2010, p.66). Regards to data types used for the purpose of this project work, structured questionnaires was used to collect the relevant data/information from the target population. The target population involved those individuals who have been working on various IT project execution courses of action under all successfully accomplished IT based projects within the Bank-CBE. In doing so, the actual level of IT system project execution success will be evaluated with a Likert Scale from **1** (*Very Agree*) to **5** (*Very Disagree*). The needed amounted of structured questionnaires will be personally distributed or administered randomly to the target population. With 37 unreturned research questionnaires, i.e. out of the total amount of questionnaires (100) that was initially disseminated makes the very final total number of responses 63 (sixty three). The above sample size is already considered to be a reasonably sufficient enough following the following argument made by Ganesh and Mehta, (2010, p.67) and Kothari (1991). That is, after doing their pilot test using only ten questionnaire responses, Ganesh and Mehta, (2010, p.67) next moved to conduct their study from responses gathered from fifty (50) respondents with the aim of upholding the reliability and validity of their research. These authors referring to the other author named Kothari, (1991) they are found to be agreed that excess of and equal to 30 sample size are by and large regarded as a sufficient one, i.e. statistically. Yet, authors added at the last section of their research that the study was aimed to explore and not verify regards to CSFs to ERP system execution process, i.e. given their chosen sample size.

Since the size of the population was quite small, Non-probability (purposive sampling) has been employed in the effort of reaching the target population (respondents) in a representative way across the Bank's successfully accomplished IT projects that are already

mentioned in the above. Besides, this is because those experts who were among the team members within the previous IT Projects implementation tasks will merely be assumed by this project work. Here, one serious challenge that should have to be raised regards to the number or size of the sample is that a significant number of individuals who were assigned or appointed to perform in different IT projects implementation work areas will be dismantled after they have completed their respective duties. This is a kind of problem that will make difficult to gather data/information to the given project work more than the sample size mentioned above or large amount of responses.

The questionnaire was developed for the purpose of this study (project work) was partially adopted from the previous selected work of researchers or authors, including Yueh, (2003); Lee and Kim, (2007); Al-Sabaawi, (2015, p.506); Shin and Lee, (1996); Hong ad Kim, (2002); and Al-Sabaawi, (2015, p.506). Whereas, the rest of research questions was own constructed based on the concept and a priori theories of the subject matter that was believed to worth to be mentioned to address concerns regards to CSFs that are already assumed in this project work.

Firstly, a number of variables of interest (the loadings), i.e. those factors that were identified to have a significant influence on previously implemented IT related projects will be selected through in-depth and critical review of numerous research articles that were done around the globe. Then, these determinant factor that had been recognized as relevant from similar research studies will be examined and/or tested, whether or not these independent variables has similar or an opposite role in the case of CBE. In doing so, in the given project work, econometrical and/or statistical methods will be employed. This consists of Principal Component Analysis (PCA) statistical estimation technique process together with other the above model's data testing tools. These may again consist of ranking CSFs through descriptive statistics, computing commonalities, unrotated and rotated component matrix, total variance calculation, Pearson correlation technique, and covariance etc. to materialize the above analysis, a statistical software package for social science (SPSS) was used. The sample size is considered okay considering the fact that most IT-experts are located in the head office of the Bank, Addis Ababa, Ethiopia. The justification of this methodology is based on the facts that have been found on several

research papers, i.e. where those determinant factors that will consider in this research have been established etc.

3.2. Summated Scale

Summing the answers to questions with Likert scale responses is the usual practice (Vogt, Vogt, Gardner, and Haeffele, 2014). As per Vogt, 2014, it is possible to construct Summated scales by adding together the numerical codes of answers. The total or the average (mean) score of the variables is used as a replacement variable (Hair, *et al*. 2010). According to Hair *et al*. (2010) summated scales provide two specific benefits. First, it provides a means of overcoming the measurement error by using multiple variables to reduce the reliance on a single response. Second, summated scales have the ability to represent the multiple aspect of a concept in a single measure. In this study, summated scales are created by adding items under each of the six independent variables (perceived usefulness, perceived ease of use, perceived risk, social influences, marketing communication influences and compatibility).

3.2.1. Dimensionality

An underlying assumption and essential requirement for creating a summated scale is that the items are unidirectional, meaning that they are strongly associated with each other and represent a single concept (Hair *et al*. 2010). On way to check dimensionality is using factor analyses. As it is said by Field, (2009) the significance of a factor loading will depend on the sample size. According to ibid, (2009) for a sample size of 50 a loading of 0.722 can be considered significant, for 100 the loading should be greater than 0.512, for 200 it should be greater than 0.364, for 300 it should be greater than 0.298, for 600 it should be greater than 0.21, and for 1000 it should be greater than 0.162.

3.2.2. Reliability Test

It is popularly known that reliability of the instrument was checked by making use of Cronbach's Alpha. Reliability Test: Before the study’s data gathering instrument or questionnaire was dispatched to capture the final data pilot testing was undertaken based on which a handful of improvements on content were made while reliability testing is conducted thereafter. Whereas, Cronbach's alpha (α) is widely used or frequently applied

reliability coefficient. The detail of the testing is presented as follows. Cronbach's α is defined numerically as follows:

$$\alpha\,(\Sigma) = n/n\text{-}1\ [\ 1 - \Sigma V_i / V\ test]$$

Where:

n = number of questions.

V_i = variance of scores on each question.

V test = total variance of overall scores (not percentage's) on the entire test.

Cronbach's Alpha was used to check the internal consistency and quality of the questionnaire that was used to collect the required data. To say the questionnaire is internally consistent and reliable alpha (α) coefficient should be greater than or equal to 0.70 (Nunnally, 1978). In this project work, the value of Cronbach's Alpha is 0.898, which is above the expected threshold limit. So, the test confirmed the reliability of the instrument, the following table (5) and (6) shows the Cronbach's alpha reliability statistics of the overall items of the survey instrument of this project work. Similarly, table (7) presents each of the CSF's Cronbach's Alpha internal consistency or reliability test reduced form results of each of the individual CSFs that are already assumed for the purpose of having a representative question items again for each variables under the project work survey instrument.

Table (5): Case Processing Summary

		Number of Items	%
Cases	Valid	59	93.7
	Excluded[a]	4	6.3
	Total	63	100.0

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

Table (6): Reliability Statistics

Cronbach's α	Number of Items
0.948	90

Table (7): The Reduced Form of Instrument Content based on Cronbach's Alpha Reliability Test

Ser. Nº	*Constructs of CSFs*	*Number of Items*	*Cronbach's α*
1	Project Leadership	4	0.745
2	Top management support	8	0.836
3	Risk Management	6	0.866
4	Proper and Adequate Training	5	0.888
5	Team Work, Composition, and Capability	7	0.870
6	Clear Business Vision & Plan/Goals & Objectives	5	0.772
7	Change Management (Organizational Resistance)	3	0.751
8	Processes & Sub-processes (Stakeholders) Participation	3	0.748
9	User Involvement	3	0.791
10	Business Process Adjustment	5	0.876
11	Work Environment and Facility	4	0.761
12	Business Process Fit: Data Fit	7	0.823
13	Effective Communication	4	0.855
14	Effective Monitoring and Control	5	0.863
15	Organizational fit: Data Fit	4	0.910
16	System Quality	9	0.799
17	Technological Infrastructure	2	0.785
18	Information Systems Adjustment	6	0.937

Source: Based on the Computation Result of SPSS.

High correlations among the CSFs are assumed to point out to build validity test. On the other side, when the results of such estimates greater than 0.70 is generally considered as meeting the criteria for reliability adequately (Ganesh and Mehta, 2010, p.68). From the above table (6), it is observed that the overall reliability result is computed to be 0.95. This result shows adequate internal consistencies is exist regards to items of the questionnaire for the reliable measure and construct validity). Similarly, on the above table 7, the reliability tests for all the preliminary CSFs considered were conducted one by one and their measurement scales are listed. Whereas, among all 22 CSFs initially considered in this project work only 18 CSFs were able to be assumed for this project work purpose, as these CSFs successfully met Cronbach's Alpha Reliability Test with their value ranged from 0.745 to 0.937, again, these are above the threshold value 0.70.

3.3. Principal Component Analysis (PCA)

Under this section of the methodology is tried to show the major equations behind Principal Component Analysis (PCA) and it was majorly adopted the lecture note made by Mazzochi, (2008, 38 - 46).

$$\mathbf{C} = \mathbf{XA}' = \begin{cases} \mathbf{c_1} = a_{11}\mathbf{x_1} + a_{12}\mathbf{x_2} + \ldots + a_{1p}\mathbf{x_p} \\ \mathbf{c_2} = a_{21}\mathbf{x_1} + a_{22}\mathbf{x_2} + \ldots + a_{2p}\mathbf{x_p} \\ \ldots \\ \mathbf{c_p} = a_{p1}\mathbf{x_1} + a_{p2}\mathbf{x_2} + \ldots + a_{pp}\mathbf{x_p} \end{cases}$$ No error term, **p** components

$\mathbf{C} = \{\mathbf{c_j}\}_{j=1,\ldots,p} = \{c_{ij}\}_{i=1,\ldots,n;\ j=1,\ldots,p}$ is a **n×p** matrix of principal component scores, with p columns (one for each principal component cj) and n rows (one for each statistical unit).

X is the usual n×p data matrix

$\mathbf{A} = \{\mathbf{a_j}\}_{j=1,\ldots,p} = \{a_{ij}\}_{i=1,\ldots,p;\ j=1,\ldots,p}$ is the **p×p** matrix of component loadings

- The followings are two additional constraints:
  - The component scores are uncorrelated across components

    $$Corr(\mathbf{C}) = \mathbf{I} \quad \text{or} \quad Corr(\mathbf{c_i}, \mathbf{c_j}) = 0 \quad \forall i \neq j \quad \text{and} \quad Corr(\mathbf{c_i}, \mathbf{c_j}) = 1 \quad \forall i = j$$

  - Which corresponds to the condition, $\mathbf{A'A} = \mathbf{I}$
  - The coefficients size across components must be constrained; otherwise the variances of the principal components would depend on the coefficients sizes as well while the aim is that they are only determined by the different weight of the original variables.

    $$\sum_{j=1}^{p} a_{ij}^2 = 1 \quad \forall\ i = 1, \ldots, p$$

- Then, the PCA equation will be

  $$\mathbf{Var}(\mathbf{c_j}) = \mathbf{a_j'Var}(\mathbf{X})\mathbf{a_j} = \mathbf{a_j'}\boldsymbol{\Sigma}\,\mathbf{a_j} = \lambda_j$$

  - PCA consists in finding the $\mathbf{a_j}$ vectors that maximize the right-hand side of the above equation, subject to the specified constraints on C and A

- It starts from the first component (the one with the largest variance) and proceeds until the last (the one with the smallest variance)
- The total variability of the p extracted components equals the total variability of the **p** original variables; the first step of PCA simply consists in passing from a set of **p** variables (**X**) to an alternative set of **p** variables (the principal components in **C**),
- Principal components are;
  - Linear combinations of the original variables, and
  - Uncorrelated between each other
- One may then decide to select a sub-set of components.
- The vectors a_j are the latent vectors (characteristic vectors or eigenvectors) of **Σ,** while the values λ_j are the corresponding latent roots (characteristic roots or eigenvalues).
- The eigenvectors and eigenvalues are unique and can be computed algebraically.

3.3.1. Component Scores

- The eigenvalues can be used as a criterion to decide the number of components to be retained for data summarization and subsequent analyses.
- Once the matrix **A** has been computed, the component scores can be also (exactly) computed by simply applying, $\mathbf{C=XA'}$
- It may be convenient to standardize the component scores so that they all have variance equal to one. In this case, the coefficient score $\mathbf{a_{ij}}$ is rescaled

$$\hat{a}_{ij} = a_{ij} / \sqrt{\lambda_j}$$

- SPSS automatically provides standardized component scores; to maintain the original component variability and the correct balance among components the inverse operation is needed,

$$a_{ij} = \hat{a}_{ij} \sqrt{\lambda_j}$$

3.3.2. Communalities

$$Var(\mathbf{x}_i) = \sum_{j=1}^{k} a_{ij}^2 Var(\mathbf{c}_j) + \sum_{j=1}^{p-k} a_{ij}^2 Var(\mathbf{c}_j) = \sum_{j=1}^{k} a_{ij}^2 \lambda_j + \sum_{j=1}^{p-k} a_{ij}^2 \lambda_j$$

- Where the λ_i are the eigenvalues and a_{ij} are the elements of the eigenvectors as before
- The first term on the right-hand side of the equation represents the amount of variance which is summarized by the retained components, while the second term is the amount of variance discarded by selecting only the first k components.
- The communality for each variable is then computed as:

$$v_i = \sum_{j=1}^{k} a_{ij}^2 \lambda_j \Big/ Var(\mathbf{x_i})$$

3.3.3. Component (Factor) Rotation

- As for factor analysis, component analysis can be also orthogonally or obliquely rotated but there are differences and drawbacks to be taken into account
- Rotation should concern all of the components and not only the selected one because
  - Otherwise there is no guarantee that the k selected components are still those which explain the larger amount of variability
  - Disparities in explained variability after rotation are generally smaller than before
- Rotation is less problematic when explained variability is already evenly spread at the extraction of principal components.
- There are many rotation methods for principal components; those discussed for factor analysis can be also applied to PCA (Mazzochi, 2008, p.38 - 46).

The starting point of factor analysis is a *correlation matrix*, in which the intercorrelations between the studied variables are presented. The dimensionality of this matrix can be reduced by "looking for variables that correlate highly with a group of other variables, but correlate very badly with variables outside of that group" (Field, 2000, p.424). *These variables* with high *intercorrelations* could well measure one underlying variable, which is called a '*factor'*.

The obtained factor creates a ***new dimension*** "that can be visualized as classification axes along which measurement variables can be plotted" (Field, 2000, p.424). This projection of the scores of the original variables on the factor leads to two results: factor scores and factor loadings. As per Rietveld and Van Hout, (1993, p.292) while ***factor***

scores are "the scores of a subject on a ... factor", ***factor loadings*** are the "correlation of the original variable with a factor" (ibid, p.292).

The factor scores can then for example be used as new scores in *multiple regression analysis*, while the factor loadings are especially useful in determining the "substantive importance of a particular variable to a factor". Besides by squaring this factor loading (it is, after all, a correlation, and the squared correlation of a variable determines the amount of variance accounted for by that particular variable). This is important information in interpreting and naming the factors (Field, 2000, p.425).

A stepwise treatment of factor analysis tells us about a step in factor analysis is reproduced. As can be seen, it consists of seven main steps: reliable measurements, correlation matrix, factor analysis versus principal component analysis, the number of factors to be retained, factor rotation, and use and interpretation of the results. Below, these steps will be discussed one at a time.

After factor extraction it might be difficult to interpret and name the factors/components on the basis of their factor loadings. Remember that the criterion of principal component analysis that the first factor accounts for the maximum part of the variance; this will often ensure that "most variables have high loadings on the most important factor, and small loadings on all other factors" (Field 2000, p. 438). Thus, interpretation of the factors can be very difficult.

A solution for this difficulty is factor rotation. Factor rotation alters the pattern of the factor loadings, and hence can improve interpretation. Rotation can best be explained by imagining factors as axes in a graph, on which the original variables load. There are two types of rotations: orthogonal and oblique rotation. In *orthogonal rotation* there is *no correlation* between the *extracted* factors, while in oblique rotation there is. It is not always easy to decide which type of rotation to take; as put by Field, (2000, p.439) the choice of rotation depends on whether there is a good theoretical reason to suppose that the factors should be related or independent, and also how the variables cluster on the factors before rotation". A fairly straightforward way to decide which rotation to take is to carry out the analysis using both types of rotation; "if the oblique rotation demonstrates a negligible correlation between the extracted factors then it is reasonable to use the orthogonally rotated solution.

There are several methods to carry out rotations. SPSS offers five: varimax, quartimax, equamax, direct oblimin and promax. The first three options are orthogonal rotation; the last two oblique. It depends on the situation, but mostly varimax is used in orthogonal rotation and direct oblimin in oblique rotation. Orthogonal rotation results in a rotated component / factor matrix that presents the 'post-rotation' loadings of the original variables on the extracted factors, and a transformation matrix that gives information about the angle of rotation. In oblique rotation the results are a pattern matrix, structure matrix, and a component correlation matrix. The pattern matrix presents the 'pattern loadings' ("regression coefficients of the variable on each of the factors", while the structure matrix presents 'structure loadings' (correlations among the variables and the factors) most of the time the pattern matrix is used to interpret the factors. The component correlation matrix presents the correlation between the extracted factors or components, and is thus important for choosing between orthogonal and oblique rotation (Rietveld and Van Hout 1993, p.281).

It is already known that the factor loadings are represented in the Rotated Component Matrix. And, these factor loadings are important for the interpretation of the factors, especially the high ones. Yet, it can be questioned that how high a loading expected to be so as to agree on those factors interpretation in a considerable manner. As per Field, (2000, p.440) this depends on the sample size, i.e. the bigger the sample the smaller the loadings can be to be significant. On the contrary to this, ibid, (2000, p.441) also stated that the significance of a loading merely provides a slight signal of the highest meaning of a variable to a factor". For this to be determined, the loadings have to be squared. Field, (2000, p.441) suggested interpreting only factor loadings with an absolute value above 0.4 (as such values of factor loadings able to explain about 16% of variance). This can only be materialized or achieved through applying the principal component analysis (PCA).

Under the concept behind Factor Analysis (FA) and Principal Component Analysis (PCA) the importance *data reduction* methods is aims to deal with large data-sets or many variables and summarize information. The idea behind these methods is to avoid double counting of the same information by distinguishing between the individual information content of each variable and the amount of information shared across several variables (Mazzochi, 2008, p.1). A data-set containing m correlated variables is condensed into a

reduced set of **p≤ m** new variables (respectively factors or principal components according to the method used) that are uncorrelated between each other and explain a large proportion of the original variability.

Regards to the pros and cons of data reduction, ibid, (2008, p.3) states that *data reduction* is a necessary step to simplify data treatment when the number of variables is very large or when correlation between the original variables is regarded as an issue for subsequent analysis. The description of complex interrelations between the original variables is made easier by looking at the extracted factors (components). As opposed to the above advantages of data reduction methods, one of the demerits has to do with the loss of some of the original information and the introduction of an additional error component.

3.3.4. Measurements

Since factor analysis departures from a correlation matrix, the used variables should *first* of all be measured at (at least) an interval level. *Secondly*, the variables should roughly be normally distributed; this makes it possible to "generalize the results of your analysis beyond the sample collected" (Field, 2000, p.444). *Thirdly*, as said by Moore and McCabe, (2002, p.103) the sample size should be taken into consideration, as correlations are not resistant, and can hence seriously influence the reliability of the factor analysis (Field, 2000, p.443; Habing, 2003).

According to Field, (2000, p.443) much has been written about the necessary sample size for factor analysis resulting in many 'rules-of-thumb'". For instance, the author Field, 2000, p.443 states that a researcher should have at least 10-15 subjects per variable. However, Habing, (2003, p.96) states that "you should have at least 50 observations and at least 5 times as many observations as variables"). Fortunately, Monte Carlo studies have resulted in more specific statements concerning sample size (Field, 2000, p.443; Habing, 2003). As stated by *ibid*, (2000, p.443), the general conclusion of these studies was that "the most important factors in determining reliable factor solutions was the absolute sample size and the absolute magnitude of factor loadings": the more frequent and higher the loadings are on a factor, the smaller the sample can be. As per Field, (2000, p.443) reports on a more recent study which concludes that "as communalities become lower the importance of sample size increases". This conclusion is adjacent to the conclusion above, as communalities can be seen as a continuation of factor loadings: the communality of a

variable is the sum of the loadings of this variable on all extracted factors (Rietveld and Van Hout 1993, p.264). As such, the communality of a variable represents the proportion of the variance in that variable that can be accounted for by all ('common') extracted factors. Thus if the communality of a variable is high, the extracted factors account for a big proportion of the variable's variance. This means that this particular variable is reflected well via the extracted factors, and hence that the factor analysis is reliable. When the communalities are not very high though, the sample size has to compensate for this.

When the data are appropriate, it is possible to create a correlation matrix by calculating the correlations between each pair of variables.
In this matrix two clusters of variables with high intercorrelations are represented. As has already been said before, these clusters of variables could well be "manifestations of the same underlying variable" (Rietveld and Van Hout 1993, p.255). The data of this matrix could then be reduced down into these two underlying variables or factors. With respect to the correlation matrix, two things are important: the variables have to be intercorrelated, but they should not correlate too highly (extreme multicollinearity and singularity) as this would cause difficulties in determining the unique contribution of the variables to a factor (Field, 2000, p.444). In SPSS the intercorrelation can be checked by using Bartlett's test of spherity, which "tests the null hypothesis that the original correlation matrix is an identity matrix" (Field, 2000, p.457). This test has to be significant: when the correlation matrix is an identity matrix, there would be no correlations between the variables. Multicollinearity, then, can be detected via the determinant of the correlation matrix, which can also be calculated in SPSS: if the determinant is greater than 0.00001, then there is no multicollinearity (Field, 2000, p.445).

3.3.4. Additional Points on Technical Facets of Principal Component Analysis

In order to understand the technical aspects of *Principal Component Analysis* (PCA) it is necessary to be familiar with the basic notions of matrix algebra. It assumed that this will assist the readers to be familiar with PCA concept.

The extraction of principal components or factors in PCA takes place by calculating the eigenvalues of the matrix. As Rietveld and Van Hout, (1993, p.259), state, the number of *positive eigenvalues* determines the number of dimensions needed to represent a set of

scores without any loss of information. Hence, the number of *positive eigenvalues* determines the number of factors/components to be extracted. The construction of the factor itself is then calculated via a transformation matrix that is determined by the eigenvectors of the eigenvalues (Rietveld and Van Hout, 1993, p.261). After constructing the factors it is possible to determine the factor loadings simply by calculating the correlations between the original variables and the newly obtained factors or components. The authors Rietveld and Van Hout, (1993, p.258) furthermore name two criteria for dimensionality reduction in Principal Component Analysis (PCA). The first is the new variables (principal components) should be chosen in such a way that the first component accounts for the maximum part of the variance, the second component the maximum part of the remaining variance, and so on. The second criterion is the scores on the new variables (components) are not correlated.

CHAPTER FOUR

4. Data Presentation, Analysis and Result Interpretations

Significant associations were found among each of the 18 CSFs in particular and principal components (dimensions or groups of CSFs) in general towards successful IS/IT project execution in Commercial Bank of Ethiopia. The study's research question and the respective hypothesis have been addressed and tested through principal component analysis with the assistance of SPSS 20.0 computation results. Besides, five main categories/dimensions were carefully identified to the successful IS/IT project implementation in CBE as presented on Rotated Component Matrix (see Table (14)). As put on table (9) the study's descriptive statistics computed based on Principal Component Analysis's (PCA's) mean result of the 5-point Likert scale response shows that all of the eighteen critical success factors were found to have a constructive role to the bank's previous IS/IT project execution efforts doing well. Besides to the above results, they have different priorities (ranking) of CSFs.

Based on the principal component analysis's Rotated Component Matrix result the project work already able to successfully identify dimensions/groups of main components to the success of IT project execution endeavor the case of CBE's. Accordingly, an identified key CSFs to IT project implementation success factors believed to have great importance to the banking sector in particular and in general to any organization that will going to adopt any IS/IT or ICT related project in terms of providing priority in their similar effort of getting done. Knowing major CSFs a priori from previous IS/IT project execution practices help to be aware of success requirements of similar projects. As per Ganesh and Mehta, 2010, p.69, generally, any IT system meant to be readily understandable, adoptable and users adaptable or friendly etc.

4.1. Descriptive Statistics

The following table (8) shows the descriptive statistics analysis result using of frequency and percent. It aims to rank all of the twenty two (22) CSFs that were considered during the initial stage of doing this project work or study. That is before conducting various statistical tests, such as Cronbach's Alpha's reliability test). In doing so each of the 63 respondents were asked simply to select the top three (3) of CSFs that they believed are most associated with

successful implementation of IT project in CBE from their IS/IT project implementation experience(s) within the Bank. From such simple computation what was a surprise is that among CSFs that was initially avoided following to their internal consistency or reliability test results (less that 0.70) found to be meaningful, these are project management (ranked fifth, 5th) and Project Progress Schedule (ranked fifteenth, 15th). Whereas, based on results found through descriptive statistics computed using the study's major method of analysis principal component analysis (PCA) and as shown in the following section of this study, Business Process Adjustment (BPADJ) and Organizational Fit: Data Fit (ORGFIT) were obtained to be ranked as second (2nd) and eighth (8th) key CSFs, respectively. Yet, BPADJ and ORGFIT were not selected by respondents as the top three (3) CSFs by respondents. Whereas, Align Business with IT Legacy System observed to be neither fulfill the reliability test nor selected as the top three (3) CSFs even by a single respondents. As per the same descriptive statistics analysis result the first eight (8) CSFs found to have a cumulative influence of 76.7 to the successful implementation moves of IS/IT project.

Table (8): Descriptive Statistics based on the Data Obtained from the Top Three (3) CSFs Selected by 63 Respondents

Lists of Critical Success Factors (CSFs)	Frequency	Percent	Rank	Cumulative Percent
Top Management Support	35	18.5	1	18.5
Team Work, Composition, and Capability	33	17.5	2	36.0
Project Leadership	17	9.0	3	45.0
Proper and Adequate Training	16	8.5	4	53.4
Project Management	13	6.9	5	60.3
Effective Communication	11	5.8	6	66.1
Processes & Sub-processes (Stakeholders) Participation	10	5.3	7	71.4
Use Trained & Experienced Consultants	10	5.3	7	76.7
Work Environment and Facility	9	4.8	8	81.5
Clear Business Vision and Plan/Goals and Objectives	8	4.2	9	85.7
Technological Infrastructure	8	4.2	9	89.9
User Involvement	5	2.6	10	92.6
Effective Monitoring and Control	5	2.6	10	95.2
System Quality	2	1.1	11	96.3
Project Progress Schedule	2	1.1	11	97.4
Change Management	2	1.1	11	98.4
Business Process Fit: Data Fit	2	1.1	11	99.5
Risk Management	1	0.5	12	100.0
Total	189	100.0		

Source: Based on SPSS 20.0 Computation Results

Consistent to the above finding of this project work Aziz, *et al.* (2012, p.8) identified top management support as a key CSF in their study.

4.1.1. Results of Descriptive Statistics based on Principal Component Analysis

The following table (9) shows descriptive statistics analysis result. It shows the means and standard deviations that is identification of 18 CSFs in ascending order of 5-point Likert scale (5=Strongly Disagree, 4= Disagree, 3= Neutral, 2= Agree and 1= Strongly agree). The standard deviations column tells us that there are no exaggerated outliers for among each of the following 18 CSFs. The 'Analysis N' tells us the exact number of valid cases and as it is put on the same table the entire sample was included.

Table (9): Descriptive Statistics based on Principal Component Analysis (PCA)

Rank	Ranking Critical Success Factors	Mean	Standard Deviation	Analysis N
1	Technological Infrastructure (TECINF)	1.96	0.674	63
2	Business Process Adjustment (BPADJ)	1.97	0.592	63
3	Information Systems Adjustment (ISADJ)	1.97	0.553	63
4	Processes and Sub-processes (Stakeholders) Participation (STAKE)	2.17	0.647	63
5	Business Process Fit: Data Fit (BUPRFIT)	2.18	0.494	63
6	Team Work, Composition, & Capability (TEAM)	2.20	0.617	63
7	Top Management Support (TMS)	2.21	0.611	63
8	Organizational Fit: Data Fit (ORGFIT)	2.24	0.681	63
9	User Involvement (USER)	2.3	0.718	63
10	Clear Business Vision & Plan/Goals & Objectives (BUVIMIO)	2.34	0.635	63
11	Work Environment and Facility (WENFAC)	2.37	0.643	63
12	Project Leadership (LEAD)	2.4	0.628	63
13	Effective Monitoring and Control (EFMOCO)	2.42	0.683	63
14	Effective Communication (EFFCOM)	2.44	0.844	63
15	Change Management (CHAMGT)	2.51	0.723	63
16	Risk Management (RISK)	2.6	0.684	63
17	System Quality (SYQUA)	2.68	0.604	63
18	Proper and Adequate Training (TRAIN)	2.7	0.894	63

Source: Based on SPSS 20.0 Computation Results

Similar to the above finding of this project work, the author Al-Sabaawi, (2015, p.496-506) clearly stated the importance of IT infrastructure, hardware and networking to IT/IS system's success amid to a need for careful choice of an ERP package that best matches the legacy system. As per Nwakanma's, *et al.* (2013, p.134) finding in Nigeria Realistic Schedule, effective use of project management skill/methodology, support from top management, user/client involvement, clear requirements and specification, clear objective and goals in terms their rank or importance towards successful IT project implementation, respectively

4.2. Results of Sampling Adequacy and Goodness-of-fit Tests

In SPSS a convenient option is offered to check whether the sample is big enough: the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-test). The sample is adequate if the value of KMO is greater than 0.5 (Field 2000: p.446). In view of this, the amount of sample already considered in this project work is found to be fairly a reasonable one following the KMO test result obtained, i.e. 0.668). Moreover, as it is put on table (A) in the Annex part of this study, an anti-image matrix of covariances and correlations computation result by SPSS. In there, all elements on the diagonal of this matrix ought to be greater than 0.5 if the sample is adequate.

Table (10): KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.668
Bartlett's Test of Sphericity	Approx. Chi-Square	454.686
	Df	153
	Sig.	.000

Source: Based on SPSS 20.0 Computation Results

The Goodness-of-fit Test determines if the sample data (correlations) are likely to arisen from some correlated factors. In this situation we want the probability value of the Chi-square statistic to be *greater than* the chosen alpha (generally 0.05). Based on our results the five (5) factor model is a good description of the data (Boduszek, 2016, p.35).

Table (11): Goodness-of-fit Test

Chi-Square	Degree of Freedom (df)	Level of Significance (Sig.)
90.311	73	0.083

Source: Based on SPSS 20.0 Computation Results

4.3. Communalities

As per Boduszek, (2016, p.31) *communalities* can be thought of as the R^2 for each of the variables that have been included in the analysis It represents the proportion of variance of each item that is explained by the factors. This is computed of the initial solution and then after extraction. These are reported in the Initial and Extraction as shown in the following table (12).

Table (12): Communalities

	Initial	Extraction
TMS	1.000	0.735
BUVIMIO	1.000	0.661
LEAD	1.000	0.663
TEAM	1.000	0.746
EFFCOM	1.000	0.531
SYQUA	1.000	0.561
TRAIN	1.000	0.507
USER	1.000	0.670
RISK	1.000	0.676
EFMOCO	1.000	0.539
CHAMGT	1.000	0.583
STAKE	1.000	0.656
TECINF	1.000	0.684
BPADJ	1.000	0.846
ISADJ	1.000	0.820
ORGFIT	1.000	0.493
BUPRFIT	1.000	0.749
WENFAC	1.000	0.614

Extraction Method: Principal Component Analysis.
Source: Based on SPSS 20.0 Computation Results

In the above table, initial communalities are estimates of the variance in each variable accounted for by all components or factors. Extraction communalities are estimates of the variance in each variable accounted for by the components in the factor solution. Values less than four wasn't considered in this analysis. As an initial step, a number of components equal to the number of variables are extracted. This means that all of the original variability is explained by the components and communalities are all equal to one. These are the communalities after the number of selected components has been fixed, for instance, according to the eigenvalues above one rule (Mazzochi, 2008, p.64). Precisely speaking, communalities indicate the amount of variance in each variable that is accounted for.

4.4. Factor (Component) Extraction

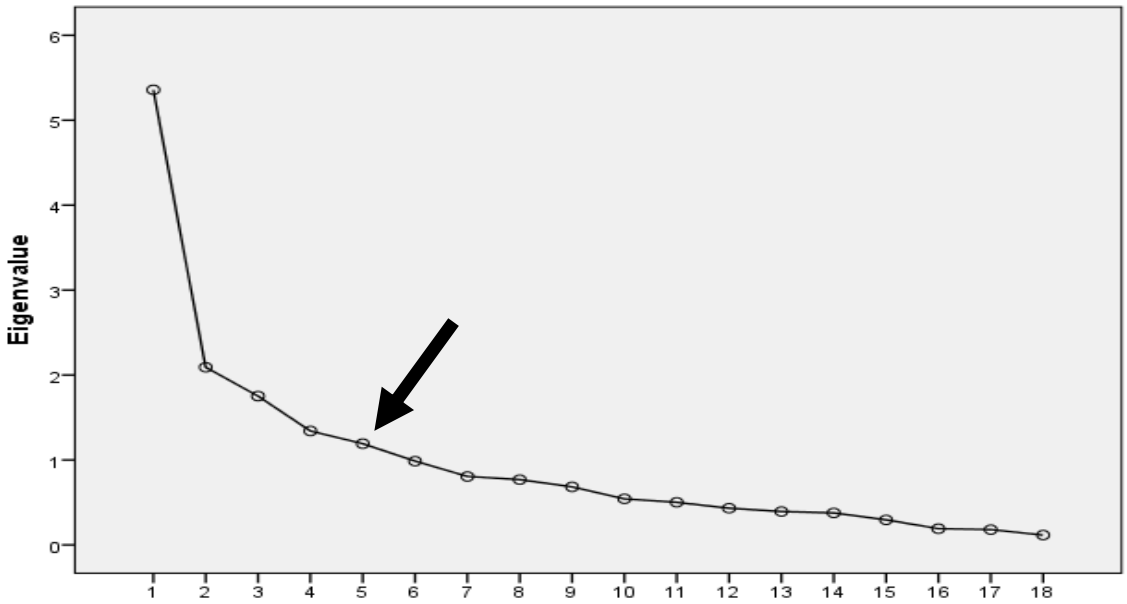

Figure (1): Scree Plot of Component Number Determination (SPSS Result).

As it can be seen from the above figure (1), what is located by the arrow on the above scree-plot shows all factors before the breaking point. This is the point where the graph is just starts to be flatter. That particular point is found to be 5, i.e. five (5) principal components are valid to be considered for this particular study/project work.

4.5. Component Matrix Results

Each figure on table (13) corresponds to the correlation between the item and the unrotated factor (component). For instance, the correlation between effective communication (EFFCOM) and component one is 0.709). These correlations can assist you devise an interpretation of the components. This is through by looking for a common line between the variables (CSFs) that have biggest or higher loadings to the respective factor or component (Boduszek, 2016, p.34).

Table (13): Component Matrix[a]

	Component				
	1	2	3	4	5
EFMOCO	0.716				
EFFCOM	0.709				
WENFAC	0.688				
TRAIN	0.671				
SYQUA	0.656				
RISK	0.628				
BUPRFIT	0.562	-0.460		0.402	
CHAMGT	0.552				-0.482
TEAM	0.545	0.438			-0.420
TMS	0.507	0.470			
USER	0.501	-0.470	0.408		
LEAD		0.672			
BUVIMIO	0.529	0.546			
ORGFIT	0.427	-0.431			
TECINF			0.607	-0.463	
ISADJ	0.525		0.592	0.436	
BPADJ			0.472	0.621	
STAKE	0.477				0.575

Extraction Method: Principal Component Analysis.

a. 5 components extracted.

Source: Based on SPSS 20.0 Computation Results

The above table (13) tells us the component loadings before rotated component matrix is made (Mazzochi, 2008, p.66).To this end, as it is put on table (E) in the annex part, there is a *reproduced correlation* it contains the reproduced correlations in the top part of it and the residuals in the bottom part of the same table. The reproduced correlation matrix is the correlation matrix based on the *extracted components* (see table (12) commonalities in the above). We expect that the values in the reproduced matrix needs to be as close to the values in the original correlation matrix as possible (see Table (D) in the annex part). Here, there is the need of observing the residual matrix, i.e., as values in the residual matrix tells the differences between the original and the reproduced matrix and these values needs to be close to zero. The need of all these is that the reproduced matrix has to be analogous with the original correlation matrix, as a result the components that were *extracted explained* for a great deal of the *variance* in the *original correlation matrix*. Since the requirements stated in the above sentences of this paragraph, it can be inferred that the extracted

components have quite good representation power to the original data. The values obtained on the diagonal of the same reproduced correlation matrix cited in the above are presented in the Communalities table (12) in the column labeled extraction.

4.6. Factor (Component) Loadings and Factor Scores

The following table (14) shows the rotated component loadings. Five components have been extracted (based on the eigenvalues greater than 1 rule. The loadings explain the relationship (like ***correlation***) between the *original variables* and the *extracted factor*, so that they may be interpreted and labeled. The fourth component has a plus (+) loadings for both Technological Infrastructure and User Involvement and a minus (–) loading on the Project Leadership. Yet, as per Mazzochi, (2008, p.56) defining or interpreting such sign differences are not an easy one.

Table (14): Rotated Component Matrix[a] (Based on SPSS 20.0 Computation Results)

	Component				
	1	**2**	**3**	**4**	**5**
BUPRFIT	**0.831**				
RISK	**0.765**				
ORGFIT	**0.666**				
WENFAC	0.591				
EFFCOM	0.499				
EFMOCO	0.491	0.449			
TRAIN	0.479	0.462			
TEAM		**0.762**			
CHAMGT		**0.734**			
SYQUA		0.572			
TMS			**0.782**		
STAKE			**0.737**		
BUVIMIO			**0.695**		
TECINF				**0.760**	
LEAD				**-0.685**	
USER				**0.684**	
BPADJ					**0.900**
ISADJ					**0.822**

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Source: Based on SPSS 20.0 Computation Results

The rotated component matrix tells us whether the solution is robust or not (Mazzochi, 2008, p.67). The Rotated Component Matrix of Principal Component Analysis (PCA) shows you the factor loadings for each variable. As it is shown in the above table (14) when we move across each row, the factors that each variable loaded on robustly or highly were identified clearly. Whereas, Effective Monitoring and Control and Proper and Adequate Training are found to be an overlapping factors (variables loading well on more than one factor). As per Wuensch, (2017, p.37) such occurrence has an implication of the need more subjects than when structure is simple.

From the above rotated component matrix result, it can be *concluded* that most of the variables (CSFs) that measure each of the five components or dimensions) that are already extracted in this project work. This is simply because almost all of variables considered are well correlated (categorically have a linear relationship) with each of the principal components.

Various researchers' study result revealed different set of or category of CSFs and level them in terms of dimensions by providing different names. Among others, the following categories or dimensions of variable were found by Hirsimäki, (2017, p.16-18). The first one is organizational dimension, this is a group of CSFs towards successful IT system project implementation, it incorporates vision and business case related factors, strategy and culture management and championship, committed management support and sponsorship, and understanding of culture related factors.

Whereas, the process dimension involves factors related to the team, project management, and change management, appropriate team skills, user-oriented change management, and user training and support. The same above author said that project management related factors and post-implementation related processes and business-driven development approach and implementation strategies are all can be considered in this process dimension (*ibid*, 2017, p.18-19).

The last category of CSFs is technological dimension of the above same IT system execution includes data and infrastructure related factors, and more specifically sustainable data quality, accuracy and integrity; understanding the firms needs requirements and

processes, business-driven, scalable and flexible technical framework. It is also observed to involve factors associated with the above two categories or dimensions were closely related to the previously mentioned, such as effective data management, and suitability of technologies and infrastructure (*ibid*, 2017, p.19-20).

4.7. Total Variance Explained

As per Neill, (2007, p.55) an excellent factor or component result is one that explains the most variance with a few numbers of factors. The above same individual stated that one can practically be contented if his/her analysis result obtained regards to variance explained between 50% and 75%. Given the Initial Eigenvalues, the first five (5) components or summary scales were meaningful as they have Eigenvalues above 1 (unity). Accordingly, the 1^{st} , 2^{nd} , 3^{rd} ,4^{th} and the 5^{th} components found to successfully explain the variance associated with IS/IT project implementation success by 29.766%, 11.617%, 9.731%, 7.451% and 6.621% of respectively and a cumulative total of 65.187% (all in all it was found to be a sound one). Whereas, the Extraction Sums of Squared Loadings provides identical information, but it is only based on the extracted factors. The Total Variance Explained analysis result can be found in the annex part (on table B).

As put in the Annex part of this study, table (B) shows five (5) components that were extracted. When we look at the section labeled 'Rotation Sums of Squared Loadings', it can be easily noticed that merely those factors that met your cut-off criterion (extraction method), i.e. five (5) factors with eigenvalues exceeding unity were already selected. The other column named "% of variance" tells us how much of the total variability, i.e. all the variables together, can be accounted for by each of the five factors or summary scales. For instance, Factor 1 accounts for 29.766% of the variability in all 18 variables, and the next factors make up 11.617% etc. Based on the rotated component matrix factor loadings, it is tried to characterize each of the factors as to where each variables (the loadings) may be belong to the following five (5) groups or dimensions of CSF (as shown on table (15))**.**

Table (15): Interpretation of Output from the Principal Component Analysis Extraction Method

Component Categorization for Groups of CSFs	Total Variance Explain (in Percentage)	List of CSFs for CBE	Rotated Component Matrix Value
Dimension (1): ***Process related CSFs***	29.766%	Business Process Fit: Data Fit (BUPRFIT)	0.831
		Risk Management (RISK)	0.765
		Organizational Fit: Data Fit (ORGFIT)	0.666
		Work Environment and Facility (WENFAC)	0.591
		Effective Communication (EFFCOM)	0.499
		Effective Monitoring and Control (EFMOCO)	0.491
		Proper and Adequate Training (TRAIN)	0.479
Dimension (2): ***Quality related CSFs***	11.617%	Team Work, Composition, and Capability (TEAM)	0.762
		Change Management (CHAMGT)	0.734
		System Quality (SYQUA)	0.572
Dimension (3): ***Enterprise related CSFs***	9.731%	Top Management Support (TMS)	0.782
		Processes and Sub-processes (Stakeholders) Participation (STAKE)	0.737
		Clear Business Vision and Plan/Goals and Objectives (BUVIMIO)	0.695
Dimension (4): ***Project related CSFs***	7.451%	Technological Infrastructure (TECINF)	0.760
		Project Leadership (LEAD)	-0.685
		User Involvement (USER)	0.684
Dimension (5): ***Business and IT System Alignment related CSFs***	6.621%	Business Process Adjustment (BPADJ)	0.900
		Information Systems Adjustment (ISADJ)	0.822
Total	65.187%		

Source: Based on SPSS 20.0 Computation Results.

The first Dimension is turned out to have seven (7) variables or high loadings (these are Business Process Fit: Data Fit (BUPRFIT), Risk Management (RISK), Organizational Fit: Data Fit (ORGFIT), Work Environment and Facility (WENFAC), Effective Communication (EFFCOM), Effective Monitoring and Control (EFMOCO), and Proper and Adequate Training (TRAIN)) loaded highly on Factor 1. Although these variables are assumed from earlier similar models and put in the above section of this study. In other words, a prior theories or researcher's perception and/or concepts and understanding could be used to categorized them into different dimensions/groups of variables and as we closely look at each of the seven variables (loadings) of this particular component/factor, it is thought to be reasonably representative or inclusive enough to label them by considering another dimension/group that is named Process related CSFs.

Dimension (2): Effective Monitoring and Control (EFMOCO), Proper and Adequate Training (TRAIN), Team Work, Composition, and Capability (TEAM), Change Management (CHAMGT), and System Quality (SYQUA) are already labeled as *Quality related CSFs.* The third Dimension includes Top Management Support, Processes and Sub-processes (Stakeholders) Participation, and Clear Business Vision and Plan/Goals and Objectives though to be good to label this category of variables as *Enterprise related CSFs.* Dimension-4 involves Technological Infrastructure, Project Leadership, and User Involvement are believed to be fine to give them a group name of *Project related CSFs*. The last dimension includes two very strongly loaded variables or loadings. These are, Business Process Adjustment and Information Systems Adjustment decided to be fair to label this category of variables as *Business and IT System Alignment related CSFs*. Here, to put a concluding remark, beyond other identified components, at least in terms of a number variables they turned out to incorporate component 1 and 2 have came into view having higher loadings and especially in terms of the amount of total variance that these two extracted components found to be capable of explain . Whereas, the last component, already named Business and IT System Alignment related CSFs obtained to have the largest loadings.

Table (16): Component Score Coefficient Matrix

	Component				
	1	2	3	4	5
TMS	-.156	.000	.414	.128	-.068
BUVIMIO	-.041	.000	.319	-.138	.027
LEAD	-.051	.168	.048	-.398	.053
TEAM	-.138	.387	-.114	-.068	.139
EFFCOM	.116	.040	.110	-.010	-.029
SYQUA	.011	.227	.070	.025	-.157
TRAIN	.101	.165	-.053	.053	-.047
USER	.049	.039	-.075	.347	.031
RISK	.279	.063	-.117	-.139	-.035
EFMOCO	.107	.125	.030	-.020	-.038
CHAMGT	-.029	.401	-.148	.002	-.111
STAKE	.079	-.276	.433	-.013	-.002
TECINF	-.177	.072	.092	.453	-.024
BPADJ	-.005	-.190	.048	-.066	.562
ISADJ	-.025	.037	-.107	.045	.464
ORGFIT	.257	-.131	.042	.028	-.111
BUPRFIT	.334	-.084	-.150	-.117	.118
WENFAC	.161	-.119	.121	.142	.043

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Component Scores.

Source: Based on SPSS 20.0 Computation Results

The following figure (2) displays the plots of CSFs (variables) in the rotated factor (component) space. Using other terms, the same figure illustrates how the variables (CSFs) are categorized in the common factor space.

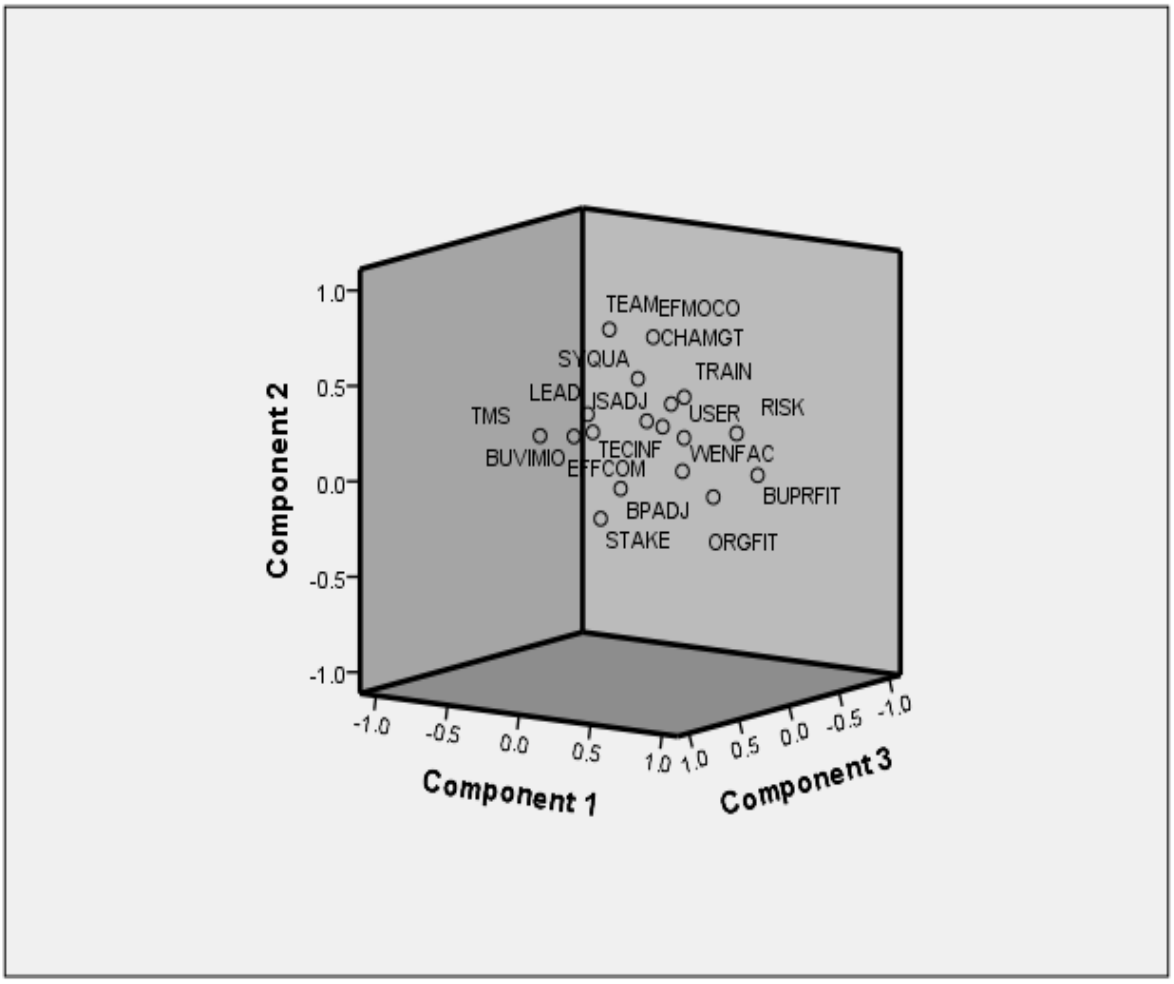

Figure (2): Component Plot in Rotated Space (Using SPSS 20.0).

The component transformation matrix explains that factor or component 1, 2, 3, 4, and 5 are statistically correlated. Yet, strictly speaking, we do not employ the following component transformation matrix table (17) for anything, except it tells us that SPSS performing the requested orthogonal rotation method (this tells us that factors are not highly correlated with each other). This is, of course, unlike oblique solution that assures that component are correlated each other.

Table (17): Component Transformation Matrix

Component	1	2	3	4	5
1	0.618	0.546	0.449	0.192	0.286
2	-0.585	0.330	0.509	-0.508	0.176
3	-0.451	0.101	-0.156	0.636	0.598
4	0.265	-0.233	-0.311	-0.521	0.712
5	0.051	-0.727	0.647	0.169	0.150

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Source: Based on SPSS 20.0 Computation Results

4.8. Concluding Remark regards to Hypothesis Statements

To this end, it time to wrap up by addressing concerns regards to the null hypothesis's testing statements against the alternative hypothesis result already obtained under the given chapter of this project work. Thus, based on various and complimentary research outcome obtained in this study, it is found to be reasonable to reject the first supposition that stipulates an individual CSFs do not have significant influence on the successful execution of IS/IT projects in CBE. Regards to the second hypothesis of the study, similarly it is proved to be logical to reject it. That is, as statistically significant five principal components were already identified and labeled having five dimensions or groups of CSFs or variables with having a considerable joint influences as they are turned out to have caused significantly larger proportion of variation or loadings among all statistical valid variables or CSFs that were considered initially in this study towards their upper hand influence in relation to IS/IT projects execution success in CBE. Simply, the last hypothesis is confirmed to be not true as the eighteen (18) CSFs or variables found to have difference in terms of their influence towards the successful IS/IT projects execution in CBE.

4.9. The Model Developed for this Project Work

The following figure (3) shows the diagrammatic representation of IS/IT system project implementation success that was constructed by the researcher regards to the eighteen (18) individual critical success factors and five (5) extracted principal components that has been explored or identified by the detailed analysis result of this project work.

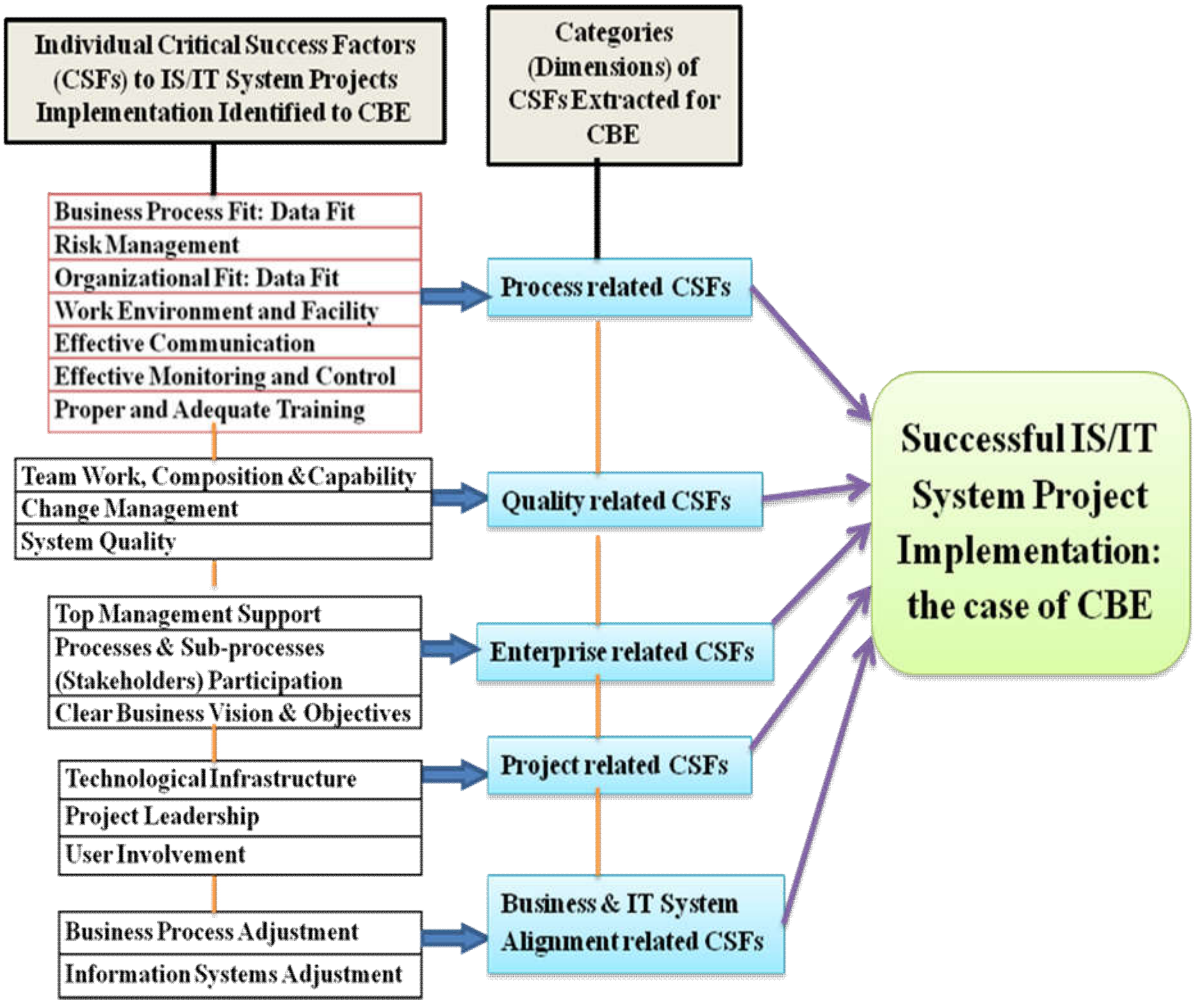

Figure (3): Own Constructed IS/IT System Project Implementation Success Model to CBE (Drawn Using Microsoft Office PowerPoint, 2007).

CHAPTER FIVE

5. Result Summaries and Conclusions and Recommendation

5.1. Result Summaries and Conclusions

In the currently IT system based business environment, the banking sector all in all and commercial banks in particular, cannot afford to stay behind in the most changing business environment. That is, in terms of responding to a call for improving business's operational processes. Accordingly, organizations must completely adopt the state-of-the-art information and communication technology and join together into its business operations is an unchallengeable concern (Omorowa, 2011, p.5).

This project work discusses various issues those are believed to be helpful to researchers, professionals, and IT project implementers who may be interested on the issues of identifying further and informed about lists of CSFs and key CSFs for the successful information system projects implementation.

In Ethiopia, CBE is already considered to be the engine of the whole economy and more particularly it is fair enough to label the Bank as the spine of major medium and long term developmental efforts in the country – Ethiopia. Consequently, given its vision of becoming a world class Commercial Bank and are facing both domestic and global financial business competition, it becomes essential to the Bank to look strategically any means to respond to the dynamic markets in general and consider adopting various well selected information technology systems. The overall objective of this research paper was to identify and list their rank and/or categorize various critical success factors (CSFs) that have positive influence to IS/IT project implementation moves. While, CBE is wreak havocking related to its inalienable effort on enhancing resource mobilization, provision loans and advances and other related major services, side by side the bank have been striving in order to support its financial business activity by various up to date *cross-functional* enterprise systems. The authors Aziz, *et al*. (2012, p.1) suggested that it is a major issue to get an IS/IT execution processes right and/or doing well organization. These authors are reasonable enough given the fact that IS/IT or ICT systems are both costly and essential investment. As stated by Aziz, *et al.* (2012, p.1) at the present

competitive business environment information technology/information system is already considered as critical tools. The above same researchers reasonably conclude that it is a main issue to get an IS/IT execution processes right or doing well organization.

Given the above points in place, the overall objective of the study was to identify critical success factors (CSFs) to successful execution of IT system projects in the case of Commercial Bank of Ethiopia (CBE). Accordingly, various CSFs have been identified and then analyzed by this project work that was believed to matter to the successful implementation of IS/IT projects. In doing so, principal component analysis, including descriptive and other related statistical econometric analysis methods were used. For the same intention the paper analyzes the data gathered from only those employees who have been participated in any IS or IT system project(s) implementation tasks at different position in Commercial Bank of Ethiopia and then their respected judgments were computed and analyzed and ranked for the purpose of extracting CSFs. And most importantly the overall research data or information gathered were found to be valid or significantly passed all statistically and/or econometrically tests.

After different level of detailed analysis, the following conclusions are already made:

Respondents were asked simply to select the top three of CSFs that they believed are most associated with successful implementation of IT project in CBE from their IS/IT project implementation experience within the Bank. From this single question and using simple descriptive study the top most critical success factors were discovered. Accordingly, two of CSFs, Top Management Support and Team Work, Composition, and Capability, alone found to be the top two CSFs , respectively, by their commutative percentage of 36%; followed by 5 CSFs (these are: Project Leadership, Proper and Adequate Training, Project Management, Effective Communication, and Processes and Sub-processes (Stakeholders) Participation). The above Five CSFs selected by respondents as a top three key CSFs make the above percentage to grow to 71.4% (for the detail, see Table (8)).

Whereas, regards to the result obtained from the detailed survey questionnaire 90 (ninety) question items using Principal Component Analysis's (PCA's) descriptive statistics based mean computes of each CSFs, i.e. given the 5-point Likert scale that lies between

5=Strong Disagree and 1=Strong agree, the first three, these are Technological Infrastructure, Business Process Adjustment, and Information Systems Adjustment turned out to be the top three (3) CSFs followed by respectively by Stakeholders Participation, Business Process Fit: Data Fit, Team Work, Composition and Capability, Top Management Support, and Organizational Data Fit etc (see Table (9)).

Whereas, as per the result obtained from Principal Component Analysis's (PCA's) rotated component matrix the result obtained was found to be consistent with the concluding remark forwarded by Ganesh and Mehta, 2010 on p.76, resemble to other organizational IT/IS systems, ERP systems are more of a business-process oriented one than technology-oriented. What makes this study's result consistent is that the PCA's based component or dimensions or group of CSFs extraction method revealed that among the five extracted major components, merely one of the is found to be technological. It is because, in this study, all the extracted dimensions were already labeled as Process, Quality, Enterprise, Project, Business and IT Systems Alignment related CSFs.

5.2. Recommendation

All in all, an organization looking for adopting various state-of-the art IS or IT system technologies in general, and commercial banks in particular, to be efficient and effective, they need to focus in the areas improving technological infrastructure, business processes and information systems adjustments/alignments and fitness towards each other, processes and sub-processes participation and/or stakeholders and proper support of top managements) were found to be on the top of all other critical factors and suggested to be a proper move toward s achieving major objectives of successful implementation of IS/IT project implementation. Due to the fact that such investments are costly and as the same time a necessity to giant organizations, it is significant that to bear the ultimate and on-going benefits of implementing IS/IT projects successfully. Thus, project implementers have to know or needs to be informed regards to what really matters most towards a successful IS/IT system project(s) implementation. In other words, what is already identified critical success factors needs to have higher attention by top managements, project managers, project tem members and other concerned key stakeholders towards

getting IS/IT project(s) implementation efforts doing well (similar concerns were also highly pronounced by Fayaz, et al. (2017, p.73) and other similar researchers).

To this end, this project work was focused on distinct organization, the Bank - CBE. Given the study's main objective, that is to discover organization wise CSFs to IS/IT or ICT project implementation, it could be employed to highlight the critical success factors faced by particular sector (in this case Commercial Banks). Yet, I would also advise future interested and capable researchers to conducted related project work may be using other or better methodology to identify various possible critical success factors to IT project execution across various sector of the economy. It is believed to be true that case studies could be used to validate these conclusions as well as to explain sector wise diversities and interrelations regards to the specific and general CSFs that could be identified among each sector. Finally, interested researchers may perform their future studies on identifying critical success factors for each phase of the IT/IS or ICT project implementation in the finance or other related organizations.

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7. Annex

7.1. Statistical Tables

Table (A): Anti-image Matrices

		TMS	BUVIMIO	LEAD	TEAM	EFFCOM	SYQUA	TRAIN	USER	RISK	EFMOCO	CHAMGT	STAKE	TECINF	BPADJ	ISADJ	ORGFIT	BUPRFIT	WENFAC
Anti-image Covariance	TMS	.406	-.186	-.038	.096	-.124	-.026	-.058	.031	.084	-.096	-.066	.046	-.118	-.092	.048	-.040	.115	-.057
	BUVIMIO	-.186	.434	-.069	-.062	.007	.037	.118	.052	-.088	-.020	-.065	-.175	.054	.041	-.061	.035	-6.600E-005	-.022
	LEAD	-.038	-.069	.623	-.109	-.020	-.090	.047	.164	.024	-.056	.081	-.012	.087	.044	-.036	.096	-.072	.080
	TEAM	.096	-.062	-.109	.405	-.128	-.049	-.077	.054	-.016	-.039	-.139	.112	-.095	-.111	-.035	.011	.132	-.005
	EFFCOM	-.124	.007	-.020	-.128	.398	.023	-.106	-.055	-.051	.130	-.036	-.078	.039	-.027	.078	-.060	-.078	-.072
	SYQUA	-.026	.037	-.090	-.049	.023	.378	.016	.031	-.186	-.079	-.108	-.052	-.142	-.045	.072	-.024	.111	-.093
	TRAIN	-.058	.118	.047	-.077	-.106	.016	.439	.008	-.015	-.146	-.001	-.132	-.029	.103	-.095	-.012	-.071	.088
	USER	.031	.052	.164	.054	-.055	.031	.008	.495	-.065	-.133	-.090	.032	-.171	-.052	-.016	.055	.040	-.082
	RISK	.084	-.088	.024	-.016	-.051	-.186	-.015	-.065	.336	-.034	.117	.043	.113	.070	-.042	-.023	-.127	-.001
	EFMOCO	-.096	-.020	-.056	-.039	.130	-.079	-.146	-.133	-.034	.413	-.018	-.033	.102	-.028	.027	-.075	-.042	-.013
	CHAMGT	-.066	-.065	.081	-.139	-.036	-.108	-.001	-.090	.117	-.018	.446	.016	.115	.188	-.114	.059	-.164	.103
	STAKE	.046	-.175	-.012	.112	-.078	-.052	-.132	.032	.043	-.033	.016	.594	-.026	-.123	.094	.009	.031	-.085
	TECINF	-.118	.054	.087	-.095	.039	-.142	-.029	-.171	.113	.102	.115	-.026	.575	.103	-.102	-.001	-.062	.001
	BPADJ	-.092	.041	.044	-.111	-.027	-.045	.103	-.052	.070	-.028	.188	-.123	.103	.369	-.227	.041	-.132	.123
	ISADJ	.048	-.061	-.036	-.035	.078	.072	-.095	-.016	-.042	.027	-.114	.094	-.102	-.227	.334	.008	.043	-.149
	ORGFIT	-.040	.035	.096	.011	-.060	-.024	-.012	.055	-.023	-.075	.059	.009	-.001	.041	.008	.687	-.098	-.043
	BUPRFIT	.115	-6.600E-005	-.072	.132	-.078	.111	-.071	.040	-.127	-.042	-.164	.031	-.062	-.132	.043	-.098	.323	-.113
	WENFAC	-.057	-.022	.080	-.005	-.072	-.093	.088	-.082	-.001	-.013	.103	-.085	.001	.123	-.149	-.043	-.113	.406
Anti-image Correlation	TMS	.627[a]	-.444	-.076	.238	-.309	-.067	-.138	.068	.229	-.234	-.156	.094	-.244	-.238	.131	-.075	.317	-.140
	BUVIMIO	-.444	.712[a]	-.133	-.147	.017	.090	.270	.111	-.231	-.047	-.147	-.345	.109	.104	-.160	.064	.000	-.052
	LEAD	-.076	-.133	.594[a]	-.218	-.040	-.186	.090	.295	.052	-.109	.153	-.020	.146	.092	-.080	.147	-.160	.159
	TEAM	.238	-.147	-.218	.670[a]	-.319	-.125	-.182	.120	-.043	-.096	-.327	.228	-.197	-.286	-.096	.021	.365	-.012
	EFFCOM	-.309	.017	-.040	-.319	.778[a]	.059	-.254	-.124	-.140	.320	-.085	-.161	.081	-.069	.213	-.114	-.216	-.178
	SYQUA	-.067	.090	-.186	-.125	.059	.702[a]	.039	.071	-.520	-.201	-.264	-.110	-.304	-.121	.203	-.046	.318	-.238
	TRAIN	-.138	.270	.090	-.182	-.254	.039	.756[a]	.018	-.040	-.343	-.002	-.258	-.057	.256	-.248	-.021	-.188	.209
	USER	.068	.111	.295	.120	-.124	.071	.018	.740[a]	-.160	-.294	-.192	.060	-.320	-.121	-.039	.094	.101	-.182
	RISK	.229	-.231	.052	-.043	-.140	-.520	-.040	-.160	.692[a]	-.093	.301	.097	.258	.198	-.127	-.048	-.387	-.002
	EFMOCO	-.234	-.047	-.109	-.096	.320	-.201	-.343	-.294	-.093	.798[a]	-.042	-.067	.210	-.073	.072	-.140	-.116	-.031
	CHAMGT	-.156	-.147	.153	-.327	-.085	-.264	-.002	-.192	.301	-.042	.564[a]	.030	.228	.463	-.294	.106	-.433	.243
	STAKE	.094	-.345	-.020	.228	-.161	-.110	-.258	.060	.097	-.067	.030	.689[a]	-.044	-.262	.212	.014	.071	-.173
	TECINF	-.244	.109	.146	-.197	.081	-.304	-.057	-.320	.258	.210	.228	-.044	.482[a]	.224	-.232	-.002	-.143	.002
	BPADJ	-.238	.104	.092	-.286	-.069	-.121	.256	-.121	.198	-.073	.463	-.262	.224	.371[a]	-.646	.081	-.383	.318
	ISADJ	.131	-.160	-.080	-.096	.213	.203	-.248	-.039	-.127	.072	-.294	.212	-.232	-.646	.585[a]	.016	.131	-.404
	ORGFIT	-.075	.064	.147	.021	-.114	-.046	-.021	.094	-.048	-.140	.106	.014	-.002	.081	.016	.861[a]	-.209	-.082
	BUPRFIT	.317	.000	-.160	.365	-.216	.318	-.188	.101	-.387	-.116	-.433	.071	-.143	-.383	.131	-.209	.584[a]	-.312
	WENFAC	-.140	-.052	.159	-.012	-.178	-.238	.209	-.182	-.002	-.031	.243	-.173	.002	.318	-.404	-.082	-.312	.749[a]

a. Measures of Sampling Adequacy(MSA)

Table (B): Total Variance Explained

Compon-ent	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.358	29.766	29.766	5.358	29.766	29.766	3.213	17.851	17.851
2	2.091	11.617	41.383	2.091	11.617	41.383	2.547	14.149	32.000
3	1.752	9.731	51.114	1.752	9.731	51.114	2.292	12.732	44.732
4	1.341	7.451	58.566	1.341	7.451	58.566	1.845	10.251	54.983
5	1.192	6.621	65.187	1.192	6.621	65.187	1.837	10.203	65.187
6	.986	5.476	70.663						
7	.806	4.476	75.139						
8	.768	4.269	79.408						
9	.683	3.795	83.203						
10	.542	3.010	86.213						
11	.501	2.783	88.996						
12	.431	2.397	91.393						
13	.393	2.181	93.574						
14	.377	2.092	95.666						
15	.294	1.635	97.301						
16	.190	1.058	98.359						
17	.180	1.000	99.360						
18	.115	.640	100.000						

Extraction Method: Principal Component Analysis.

Table (C): Inverse of Correlation Matrix

	TMS	BUVIMIO	LEAD	TEAM	EFFCOM	SYQUA	TRAIN	USER	RISK	EFMOCO	CHAMGT	STAKE	TECINF	BPADJ	ISADJ	ORGFIT	BUPRFIT	WENFAC
TMS	2.466	-1.058	-.151	.587	-.770	-.170	-.327	.152	.619	-.573	-.367	.192	-.506	-.615	.356	-.142	.876	-.346
BUVIMIO	-1.058	2.307	-.255	-.351	.041	.223	.619	.240	-.606	-.110	-.335	-.679	.218	.259	-.420	.117	.000	-.123
LEAD	-.151	-.255	1.604	-.434	-.080	-.382	.173	.531	.113	-.216	.291	-.032	.243	.192	-.175	.225	-.357	.316
TEAM	.587	-.351	-.434	2.470	-.795	-.319	-.432	.267	-.116	-.236	-.768	.464	-.409	-.740	-.262	.040	1.009	-.029
EFFCOM	-.770	.041	-.080	-.795	2.513	.152	-.607	-.279	-.384	.791	-.202	-.331	.169	-.180	.584	-.218	-.604	-.444
SYQUA	-.170	.223	-.382	-.319	.152	2.644	.095	.165	-1.459	-.508	-.642	-.232	-.651	-.324	.570	-.091	.910	-.609
TRAIN	-.327	.619	.173	-.432	-.607	.095	2.277	.038	-.103	-.806	-.005	-.505	-.114	.637	-.647	-.039	-.499	.494
USER	.152	.240	.531	.267	-.279	.165	.038	2.020	-.391	-.651	-.408	.111	-.600	-.282	-.096	.162	.253	-.406
RISK	.619	-.606	.113	-.116	-.384	-1.459	-.103	-.391	2.973	-.249	.777	.216	.586	.563	-.378	-.100	-1.173	-.007
EFMOCO	-.573	-.110	-.216	-.236	.791	-.508	-.806	-.651	-.249	2.424	-.098	-.135	.431	-.186	.194	-.263	-.316	-.076
CHAMGT	-.367	-.335	.291	-.768	-.202	-.642	-.005	-.408	.777	-.098	2.242	.059	.449	1.142	-.763	.192	-1.140	.571
STAKE	.192	-.679	-.032	.464	-.331	-.232	-.505	.111	.216	-.135	.059	1.685	-.076	-.560	.475	.022	.162	-.353
TECINF	-.506	.218	.243	-.409	.169	-.651	-.114	-.600	.586	.431	.449	-.076	1.738	.486	-.529	-.003	-.331	.005
BPADJ	-.615	.259	.192	-.740	-.180	-.324	.637	-.282	.563	-.186	1.142	-.560	.486	2.709	-1.839	.160	-1.108	.822
ISADJ	.356	-.420	-.175	-.262	.584	.570	-.647	-.096	-.378	.194	-.763	.475	-.529	-1.839	2.994	.034	.399	-1.098
ORGFIT	-.142	.117	.225	.040	-.218	-.091	-.039	.162	-.100	-.263	.192	.022	-.003	.160	.034	1.457	-.443	-.155
BUPRFIT	.876	.000	-.357	1.009	-.604	.910	-.499	.253	-1.173	-.316	-1.140	.162	-.331	-1.108	.399	-.443	3.097	-.861
WENFAC	-.346	-.123	.316	-.029	-.444	-.609	.494	-.406	-.007	-.076	.571	-.353	.005	.822	-1.098	-.155	-.861	2.466

Table (D): Correlation Matrix

		TMS	BUVIMIO	LEAD	TEAM	EFFCOM	SYQUA	TRAIN	USER	RISK	EFMOCO	CHAMGT	STAKE	TECINF	BPADJ	ISADJ	ORGFIT	BUPRFIT	WENFAC
Correlation	TMS	1.000	.551	.174	.281	.402	.336	.271	.117	.000	.365	.290	.337	.246	.193	.174	.103	-.053	.262
	BUVIMIO	.551	1.000	.331	.344	.341	.338	.130	-.004	.263	.331	.330	.424	-.021	.169	.244	.057	.109	.296
	LEAD	.174	.331	1.000	.290	.087	.203	-.006	-.356	.067	.126	.055	.114	-.205	.080	.018	-.120	-.033	-.105
	TEAM	.281	.344	.290	1.000	.398	.419	.354	.129	.194	.317	.437	.083	.213	.322	.441	.000	.021	.173
	EFFCOM	.402	.341	.087	.398	1.000	.345	.515	.265	.408	.311	.386	.377	.113	.166	.195	.334	.452	.458
	SYQUA	.336	.338	.203	.419	.345	1.000	.322	.249	.546	.513	.331	.290	.248	.064	.168	.217	.140	.426
	TRAIN	.271	.130	-.006	.354	.515	.322	1.000	.320	.360	.540	.392	.312	.189	.102	.291	.302	.415	.304
	USER	.117	-.004	-.356	.129	.265	.249	.320	1.000	.302	.381	.266	.082	.398	.162	.338	.178	.285	.442
	RISK	.000	.263	.067	.194	.408	.546	.360	.302	1.000	.465	.196	.201	-.047	.046	.194	.370	.558	.483
	EFMOCO	.365	.331	.126	.317	.311	.513	.540	.381	.465	1.000	.360	.317	.061	.187	.259	.316	.360	.385
	CHAMGT	.290	.330	.055	.437	.386	.331	.392	.266	.196	.360	1.000	.098	.086	-.038	.278	.101	.310	.216
	STAKE	.337	.424	.114	.083	.377	.290	.312	.082	.201	.317	.098	1.000	.041	.201	.065	.165	.195	.316
	TECINF	.246	-.021	-.205	.213	.113	.248	.189	.398	-.047	.061	.086	.041	1.000	.073	.281	.048	-.023	.253
	BPADJ	.193	.169	.080	.322	.166	.064	.102	.162	.046	.187	-.038	.201	.073	1.000	.619	-.013	.200	.136
	ISADJ	.174	.244	.018	.441	.195	.168	.291	.338	.194	.259	.278	.065	.281	.619	1.000	.044	.255	.397
	ORGFIT	.103	.057	-.120	.000	.334	.217	.302	.178	.370	.316	.101	.165	.048	-.013	.044	1.000	.433	.364
	BUPRFIT	-.053	.109	-.033	.021	.452	.140	.415	.285	.558	.360	.310	.195	-.023	.200	.255	.433	1.000	.474
	WENFAC	.262	.296	-.105	.173	.458	.426	.304	.442	.483	.385	.216	.316	.253	.136	.397	.364	.474	1.000
Sig. (1-tailed)	TMS		.000	.086	.013	.001	.004	.016	.181	.500	.002	.011	.003	.026	.064	.086	.210	.340	.019
	BUVIMIO	.000		.004	.003	.003	.003	.156	.487	.019	.004	.004	.000	.436	.092	.027	.330	.198	.009
	LEAD	.086	.004		.011	.249	.055	.480	.002	.302	.163	.334	.186	.054	.267	.446	.175	.400	.207
	TEAM	.013	.003	.011		.001	.000	.002	.157	.064	.006	.000	.260	.047	.005	.000	.499	.434	.087
	EFFCOM	.001	.003	.249	.001		.003	.000	.018	.000	.007	.001	.001	.189	.097	.063	.004	.000	.000
	SYQUA	.004	.003	.055	.000	.003		.005	.024	.000	.000	.004	.011	.025	.309	.094	.044	.137	.000
	TRAIN	.016	.156	.480	.002	.000	.005		.005	.002	.000	.001	.006	.069	.213	.010	.008	.000	.008
	USER	.181	.487	.002	.157	.018	.024	.005		.008	.001	.017	.263	.001	.103	.003	.081	.012	.000
	RISK	.500	.019	.302	.064	.000	.000	.002	.008		.000	.062	.057	.358	.360	.064	.001	.000	.000
	EFMOCO	.002	.004	.163	.006	.007	.000	.000	.001	.000		.002	.006	.317	.072	.020	.006	.002	.001
	CHAMGT	.011	.004	.334	.000	.001	.004	.001	.017	.062	.002		.221	.251	.383	.014	.215	.007	.044
	STAKE	.003	.000	.186	.260	.001	.011	.006	.263	.057	.006	.221		.375	.057	.307	.098	.063	.006
	TECINF	.026	.436	.054	.047	.189	.025	.069	.001	.358	.317	.251	.375		.284	.013	.355	.429	.023
	BPADJ	.064	.092	.267	.005	.097	.309	.213	.103	.360	.072	.383	.057	.284		.000	.461	.058	.144
	ISADJ	.086	.027	.446	.000	.063	.094	.010	.003	.064	.020	.014	.307	.013	.000		.366	.022	.001
	ORGFIT	.210	.330	.175	.499	.004	.044	.008	.081	.001	.006	.215	.098	.355	.461	.366		.000	.002
	BUPRFIT	.340	.198	.400	.434	.000	.137	.000	.012	.000	.002	.007	.063	.429	.058	.022	.000		.000
	WENFAC	.019	.009	.207	.087	.000	.000	.008	.000	.000	.001	.044	.006	.023	.144	.001	.002	.000	

Table (E): Reproduced Correlations

		TMS	BUVIMIO	LEAD	TEAM	EFFCOM	SYQUA	TRAIN	USER	RISK	EFMOCO	CHAMGT	STAKE	TECINF	BPADJ	ISADJ	ORGFIT	BUPRFIT	WENFAC
Reproduced Correlation	TMS	.735[a]	.592	.196	.347	.379	.433	.245	.129	.029	.334	.248	.518	.335	.160	.170	.039	-.112	.301
	BUVIMIO	.592	.661[a]	.440	.384	.417	.414	.247	-.063	.202	.381	.248	.527	.000	.252	.190	.081	.074	.259
	LEAD	.196	.440	.663[a]	.354	.115	.173	.004	-.434	.075	.128	.176	.141	-.380	.114	.015	-.164	-.065	-.169
	TEAM	.347	.384	.354	.746[a]	.321	.436	.366	.176	.193	.386	.548	.029	.203	.319	.515	-.108	.071	.153
	EFFCOM	.379	.417	.115	.321	.531[a]	.487	.473	.296	.487	.525	.371	.408	.123	.156	.262	.359	.419	.496
	SYQUA	.433	.414	.173	.436	.487	.561[a]	.474	.264	.396	.509	.502	.289	.198	-.022	.169	.241	.236	.374
	TRAIN	.245	.247	.004	.366	.473	.474	.507[a]	.407	.485	.503	.452	.205	.208	.087	.299	.330	.422	.459
	USER	.129	-.063	-.434	.176	.296	.264	.407	.670[a]	.268	.315	.270	.055	.526	.152	.397	.285	.329	.487
	RISK	.029	.202	.075	.193	.487	.396	.485	.268	.676[a]	.508	.350	.232	-.116	.052	.181	.485	.656	.464
	EFMOCO	.334	.381	.128	.386	.525	.509	.503	.315	.508	.539[a]	.441	.324	.128	.129	.283	.338	.425	.470
	CHAMGT	.248	.248	.176	.548	.371	.502	.452	.270	.350	.441	.583[a]	.013	.195	-.034	.241	.112	.193	.233
	STAKE	.518	.527	.141	.029	.408	.289	.205	.055	.232	.324	.013	.656[a]	.036	.211	.078	.287	.204	.410
	TECINF	.335	.000	-.380	.203	.123	.198	.208	.526	-.116	.128	.195	.036	.684[a]	.091	.293	-.006	-.122	.267
	BPADJ	.160	.252	.114	.319	.156	-.022	.087	.152	.052	.129	-.034	.211	.091	.846[a]	.733	-.061	.223	.245
	ISADJ	.170	.190	.015	.515	.262	.169	.299	.397	.181	.283	.241	.078	.293	.733	.820[a]	-.003	.297	.343
	ORGFIT	.039	.081	-.164	-.108	.359	.241	.330	.285	.485	.338	.112	.287	-.006	-.061	-.003	.493[a]	.508	.445
	BUPRFIT	-.112	.074	-.065	.071	.419	.236	.422	.329	.656	.425	.193	.204	-.122	.223	.297	.508	.749[a]	.501
	WENFAC	.301	.259	-.169	.153	.496	.374	.459	.487	.464	.470	.233	.410	.267	.245	.343	.445	.501	.614[a]
Residual[b]	TMS		-.042	-.022	-.067	.023	-.098	.026	-.012	-.029	.031	.042	-.181	-.089	.034	.004	.064	.059	-.038
	BUVIMIO	-.042		-.108	-.040	-.076	-.075	-.118	.059	.061	-.050	.082	-.103	-.020	-.083	.053	-.024	.034	.037
	LEAD	-.022	-.108		-.064	-.028	.031	-.011	.078	-.009	-.002	-.121	-.026	.176	-.034	.002	.045	.032	.064
	TEAM	-.067	-.040	-.064		.077	-.018	-.012	-.048	.001	-.069	-.111	.053	.010	.003	-.074	.108	-.050	.020
	EFFCOM	.023	-.076	-.028	.077		-.142	.041	-.031	-.078	-.214	.015	-.031	-.010	.010	-.067	-.025	.033	-.038
	SYQUA	-.098	-.075	.031	-.018	-.142		-.152	-.014	.150	.003	-.172	.001	.050	.086	.000	-.024	-.096	.052
	TRAIN	.026	-.118	-.011	-.012	.041	-.152		-.086	-.125	.037	-.060	.107	-.019	.015	-.007	-.028	-.007	-.155
	USER	-.012	.059	.078	-.048	-.031	-.014	-.086		.034	.066	-.004	.027	-.129	.010	-.059	-.107	-.043	-.045
	RISK	-.029	.061	-.009	.001	-.078	.150	-.125	.034		-.043	-.154	-.032	.069	-.006	.014	-.115	-.098	.019
	EFMOCO	.031	-.050	-.002	-.069	-.214	.003	.037	.066	-.043		-.081	-.006	-.067	.058	-.024	-.022	-.065	-.084
	CHAMGT	.042	.082	-.121	-.111	.015	-.172	-.060	-.004	-.154	-.081		.086	-.108	-.004	.036	-.010	.117	-.017
	STAKE	-.181	-.103	-.026	.053	-.031	.001	.107	.027	-.032	-.006	.086		.004	-.010	-.013	-.122	-.009	-.094
	TECINF	-.089	-.020	.176	.010	-.010	.050	-.019	-.129	.069	-.067	-.108	.004		-.018	-.012	.053	.099	-.014
	BPADJ	.034	-.083	-.034	.003	.010	.086	.015	.010	-.006	.058	-.004	-.010	-.018		-.114	.048	-.023	-.109
	ISADJ	.004	.053	.002	-.074	-.067	.000	-.007	-.059	.014	-.024	.036	-.013	-.012	-.114		.047	-.042	.054
	ORGFIT	.064	-.024	.045	.108	-.025	-.024	-.028	-.107	-.115	-.022	-.010	-.122	.053	.048	.047		-.076	-.081
	BUPRFIT	.059	.034	.032	-.050	.033	-.096	-.007	-.043	-.098	-.065	.117	-.009	.099	-.023	-.042	-.076		-.027
	WENFAC	-.038	.037	.064	.020	-.038	.052	-.155	-.045	.019	-.084	-.017	-.094	-.014	-.109	.054	-.081	-.027	

Extraction Method: Principal Component Analysis.

a. Reproduced communalities

b. Residuals are computed between observed and reproduced correlations. There are 69 (45.0%) nonredundant residuals with absolute values greater than 0.05.

7.2. Research Questionnaire

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

Master of Arts in Project Management

This is project work questionnaire to be filled only by those employees who have been participated in any IT system project(s) (Such as: ERP, CRM, T-24, etc.) implementation tasks at different position in Commercial Bank of Ethiopia

Dear Respondent:

This questionnaire is designed to get the relevant information for the current study that aims to address the general and specific objectives of the study. The overall purpose of the study is to identify critical factors that matters to the successful implementation of IT system project in Commercial Bank of Ethiopia (CBE). Besides, the soundness and validity of the final research findings or study outcomes highly depend/relies on your commitment and genuine responses. All the information/responses/ provided is to be used only for this study and any information given will remain be confidential. Therefore, I kindly request you to fill the questionnaire carefully and as much as possible return to me after three (3) days.

I HAVE TO THANK YOU IN ADVANCE…!!!

General Note:

1. No need of writing your name
2. If you require further clarification or may be details any issue under concern, please do not hesitate to contact me directly through the following mobile number: **09-11-69-51-69**

With best regards,

Elias Yenehun Gedamu

(Your Staff at CBE)

Part (I): Demographic Information

1. Gender: □ Male □ Female

2. Age: □ 25 or below □ 26-35 □ 36-45 □ >46

3. Educational Background /Academic Qualification/:

□ Diploma □ First Degree □ MA or MSc Degree □ PhD and Above

4. How long you have been serving in the Bank (CBE):

□ Below 1year □ 1-5 year(s) □ 6-10 years □ 11-15 years □ >15 years

5. How long have you been working in IT/IS project implementation as member of the project team?

□ Below 1 year □ 1–3 years □ 4–7 years □ 8–10 years □ > 10 years

6. In how many IT/IS project implemetation tasks have you participated in within the Bank?

□ 1 project □ 2–4 projects □ 5–7 projects □ 8–10 projects □ > 10 projects

7. Would you mention (write) the specific *name* of successfully implemented IT system project(s) within the Bank that you were Participated/ involved as one of a team member in the project.

a) _____

b) _____

c) _____

d) _____

8. Your current position at your current company?

□ Program Management Director

□ Project Manager

□ Team Leader

□ IT Project Implementation Team Member (that is regardless of your previous job title or job grade from either technical team or business job family)

Part (II): Detailed Question that Aims to Identify Critical Success Factors to IS/IT Project Implementation in CBE

Please indicate to what extent you agree or disagree with each of the statements in the following table by putting a mark (√) in each of the respective cells and appropriate column within a range between strongly agree and strongly disagree.

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9.1	Top Management Support (TMS)	TMS1	Top management actively engages in the IS/IT project(s) selection process					
		TMS2	Top management actively engages in recruiting IS/IT project team members					
		TMS3	Top management tries to encourage and/or convince users (processes & sub-processes) to adopt the IS/IT project					
		TMS4	Top management is concerned with the operational performance of the IT project					
		TMS5	Top management tries to take part in prioritizing IS/IT project execution activities					
		TMS6	Top management support initiative of IT System project					
		TMS7	Existence of communicating IT strategy for all employees in the organization from top Management to IT System project					
		TMS8	Members of top management have been supportive to approve sufficient budget to deal with change requirements willing to IT system project implementation provide stable funding to the IT System project implementation activities, when it is deemed necessarily					
9.2	Clear Business Vision and Plan/Goals and Objectives (BUVIMIO)	BUVIMIO1	The Bank outlines a clear vision for IT system designing and implementation					
		BUVIMIO2	The Bank aims to achieving strategic advantage through work plan					
		BUVIMIO3	Top executive pays attention to initiatives submitted by the end-users of the IT system project in CBE					
		BUVIMIO4	Business goals and targets are cascaded from the organization's objectives and goals and given to you in line with your job description					
		BUVIMIO5	Your project goals and targets are SMART (Specific, Measurable, Achievable, Realistic and Timely)					
9.3	Project Leadership (LEAD)	LEAD1	Project leader/manager has been successfully handled change resistant behaviors of processes/sub-processes and employees/users in the Bank					
		LEAD2	Project leader/manager(s) has been successful on handling and/or resolving conflicts					

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		LEAD3	Existence of the leadership in the organization is generally considered to exemplify mentoring, facilitating, or nurturing, coordinating, and organizing etc					
		LEAD4	The project leader/manager(s) have sufficient project experience and educational background					
9.4	Team Work, Composition, and Capability (TEAM)	TEAM1	Key members have the capability of providing training to employees to use the IS/IT project					
		TEAM2	Key members can dedicate enough time to tasks related to the IS/IT project implementation					
		TEAM3	Key members clearly understand the operational processes for which they were responsible in the project					
		TEAM4	There is good cooperation between above cross-functional team members					
		TEAM5	Key members are equipped with effective problem-solving capabilities					
		TEAM6	Existence of cross-functional team or mix of appropriate project personnel within the project team					
		TEAM7	Existence of experience sharing and/or support among the project team members to realize IT system related targets in the Bank					
9.5	Effective Communication (EFFCOM)	EFFCOM1	There exists flow of information between the IT system's key project team members and end users.					
		EFFCOM2	Key members are equipped with good communication skills					
		EFFCOM3	Existence of formal communication plan for IT system project implementation					
		EFFCOM4	Existence of communications between top management and the project team					
9.6	System Quality (SYQUA)	SYQUA1	Our Bank operates IS/IT project without having technical issues					
		SYQUA2	The Bank's IS/IT project provided reliable, precise, accurate and consistent information					
		SYQUA3	The Bank's IS/IT project prepare input data and interpret information processing results adequately					
		SYQUA4	The Bank's IS/IT project handle problems associated with unauthorized access and modifications					

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
		SYQUA5	The Bank's IS/IT project provide helpful information and improve task-performance efficiency					
		SYQUA6	Users can understand the IS/IT project's t structure and its user functions					
		SYQUA7	It is easy to test the IS/IT project to ensure the system performs its intended functions					
		SYQUA8	Less or minimal effort is required to correct errors and enhance the original IS/IT project					
		SYQUA9	Less or minimal effort is required to adjust the IS/IT project to new conditions, demands and circumstances					
9.7	Proper and Adequate Training (TRAIN)	TRAIN1	Adequate technical training was provided before the project implementation process has began based on knowledge and skills shortcomings (via conducting learning need assessment)					
		TRAIN2	The bank successfully used key-user concepts for employee training					
		TRAIN3	Existence of adequate training program for IT implementation project team					
		TRAIN4	Existence of timely training program for IT system end users					
		TRAIN5	There is clear strategy for education and training within the Bank					
9.8	User's Involvement (USER)	USER1	End users actively involved or participated adequately in the IT system project implementation					
		USER2	Representative users from different processes and sub-processes were participated in the IT system project implementation					
		USER3	Existence of conditions to users to know or understand the IT systems capabilities more clearly					
9.9	Risk Management (RISK)	RISK1	Risks were identified at the outset (beginning) of the project					
		RISK2	IT system project implementation related risk were prevented and/or mitigated or handled successfully					
		RISK3	Risk analysis has been done periodically during the process of IT system project implementation					
		RISK4	Risk management related activities were done from an organization perspective					
		RISK5	Risk management related activities were done from					

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
			people viewpoint					
		RISK6	Risk management related activities were done from a procedure perspectives					
9.10	Effective Monitoring and Control (EFMOCO)	EFMOCO1	Top management stresses the importance of effective management in terms follow up and controlling the IS/IT project implementation activities					
		EFMOCO2	Proper monitoring and controlling mechanism was there to evaluate the effectiveness of the IT system project implementation activities					
		EFMOCO3	There exists proper system of monitoring and follow up to IT project implementation, and it was successful in preventing incidents and on provides regular feedback					
		EFMOCO4	IT project implementation related performances were closely monitored (continuously) and controlled (periodically) by the responsible project personnel					
		EFMOCO5	There has been adequate monitoring and controlling efforts towards IT project implementation activities and were contributed to the success or realization of objectives of the projects.					
9.11	Change Management (Organizational Resistance) (CHAMGT)	CHAMGT1	Existence of the required flexibility in the administration system to apply IT system					
		CHAMGT2	The possibility to modify the organization structure to suit IT implementation					
		CHAMGT3	The possibility to change policies and instructions to suit IT implementation					
9.12	Process's and Sub-process's (Stakeholder's) Participation (STAKE)	STAKE1	Top management realizes the importance of communication and/or participation to improve IS/IT project's designing and implementation procedures					
		STAKE2	Effective communications spread the objectives of IT systems to all administration levels of the Bank					
		STAKE3	Good communications between the project team and the processes and sub-processes help determine defects or shortcomings in IT designing and implementation					
9.13	Technological Infrastructure (TECINF)	TECINF1	In general, existence of adequate resources of IT infrastructure					
		TECINF2	Existence of adequate resources of networking					

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
			infrastructure					
9.14	Business Process Adjustment (BPADJ)	BPADJ1	Significant time and effort have been required to change basic processes to align with the IS/IT project					
		BPADJ 2	Significant time and effort have been required to change the Bank's processes flow to align with the IS/IT project					
		BPADJ3	Significant time and effort have been required to standardize our Bank's processes to align with the IS/IT project					
		BPADJ4	Significant time and effort have been required to integrate our redundant Bank processes to align with the IS/IT project					
		BPADJ5	Significant time and effort have been required to alter our document and data elements to align with the IS/IT project					
9.15	Information Systems Adjustment (ISADJ)	ISADJ1	Significant time and effort have been required to alter IS/IT project data items to align with our Bank's processes/ sub-processes needs					
		ISADJ2	Significant time and effort have been required to add new IS/IT project data items to align with our Bank's processes/ sub-processes needs					
		ISADJ3	Significant time and effort have been required to change IS/IT project processes to align with our Bank's business processes/ sub-processes needs					
		ISADJ4	Significant time and effort have been required to append new IS/IT project processes to align with our Bank's processes/ sub-processes needs					
		ISADJ5	Significant time and effort have been required to change IS/IT project input/output screens to align with our Bank's processes/ sub-processes needs					
		ISADJ6	Significant time and effort have been required to change IS/IT project reports to align with our Bank's processes/ sub-processes needs					
9.16	Organizational Fit: Data Fit (ORGFIT)	ORGFIT1	The names and meanings of the IS/IT project data items correspond to those of documents used in the Bank					
		ORGFIT2	The forms and formats of the IS/IT project data items correspond to those of documents used in the					

Ser. No	Critical Success Factors		Description to each the corresponding Critical Success Factor (CSFs) Candidates	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
			Bank					
		ORGFIT3	The outputs data items of the new IS/IT project correspond to those of documents used in the Bank					
		ORGFIT4	The inputs data items of the new IS/IT project correspond to those of documents used in the Bank					
9.17	Business Process Fit: Data Fit (BUPRFIT)	ORGFIT1	The business processes built into the IS/IT project meet all the needs required from the Bank's processes					
		ORGFIT 2	The business processes flow built into the IS/IT project support the flow of Bank's processes					
		ORGFIT 3	The business process built into the IS/IT project accommodates the change required from the Bank's processes					
		ORGFIT 4	The business process built into the IS/IT project corresponds to the business practices of our Bank					
		ORGFIT 5	The user interface design of the IS/IT project structure can support the work processes required to conduct business in our Bank					
		ORGFIT 6	The user interface design of the IS/IT project can improve the capability of users in the Bank.					
		ORGFIT 7	The user interface design of the IS/IT project can meet the business needs of our Bank					
9.18	Project Work Environment and Facility (WENFAC)	WENFAC1	All the required IT related hardware equipments were delivered to the project based on the best available quality status					
		WENFAC 2	All the required resources were available during executing IT system project in adequate amount					
		WENFAC 3	Existence of adequate non-IT related office equipments and sufficient and clean work space to discharge your job assignments in IT system project implementation					
		WENFAC 4	The overall facility of the project work area was good					

Part (III): Based on your previous IS/IT project implementation experience(s) within the Bank, mark three (3) of the following factors that you think/believe are most associated with successful implementation of IT project in the Bank, CBE.

1) Top Management Support ☐
2) Project Leadership Team Work, Composition, and Capability ☐
3) Clear Business Vision and Plan/Goals and Objectives ☐
4) Effective Communication ☐
5) System Quality ☐
6) Proper and Adequate Training ☐
7) Project Progress Schedule ☐
8) User Involvement ☐
9) Risk Management ☐
10) Effective Monitoring and Control ☐
11) Change Management ☐
12) Processes and Sub-processes (Stakeholders) Participation ☐
13) Technological Infrastructure ☐
14) Project Management ☐
15) Use Trained and Experienced Consultants ☐
16) Align Business with IT Legacy System ☐
17) Information Systems Adjustment ☐
18) Business Process Adjustment ☐
19) Organizational Fit: Data Fit ☐
20) Business Process Fit: Data Fit ☐
21) Work Environment and Facility ☐

Part (IV): If you have anything else to add and/or you think that something has been forgotten in this questionnaire, please feel free to precisely write your comment on the following free space. (Hint: regard to key determining factors or critical success factors to IS/IT system project implementation in CBE or any other related suggestion).

Finally, I Have to Forward My Deepest Gratitude and Respect for Your Dedication for Properly and Completely Addressing the Entire Research Questions…!!!