

***Project Management Causes of Project Success:  
The Case of Selected Public Building Construction Projects in  
Jimma Town***

***A Research Thesis Submitted to the School of Graduate Studies of Jimma  
University in Partial Fulfillment of the Requirements for the Award of  
Master's Degree in Project Management and Finance***

**BY: URGESSA GURE TUFA**



**JIMMA UNIVERSITY**

**COLLEGE OF BUSINESS & ECONOMICS**

**M.A PROGRAM IN PROJECT MANAGEMENT & FINANCE**

**JULY, 2020**

**JIMMA, ETHIOPIA**

***Project Management Causes of Project Success: The Case of  
Selected Public Building Construction Projects in Jimma  
Town***

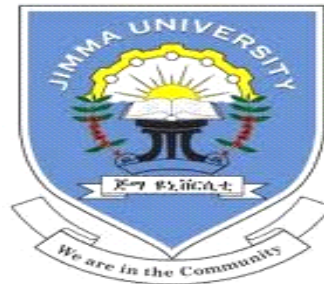
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***A Thesis Submitted to the School of Graduate Studies of Jimma  
University in Partial Fulfillment of the Requirements for the Award of  
Master's Degree in Project Management and Finance (MA.)***

**JIMMA UNIVERSITY**

**COLLEGE OF BUSINESS & ECONOMICS**

**M.A PROGRAM IN PROJECT MANAGEMENT & FINANCE**

**JULY, 2020**

**JIMMA, ETHIOPIA**

## Declaration

I hereby declare that this thesis entitled “Project Management Causes of Project Success: The Case of Selected Public Building Construction Projects in Jimma Town”, has been carried out by me under the guidance and supervision of Arega Seyoum (PhD) and *Mohammed Getahun (M.Sc.)*. The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions.

**Researcher’s Name**

**Date**

**Signature**

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## Certificate

This is to certify that the thesis entitles “Project Management Causes of Project Success: The Case of Selected Public Building Construction Projects in Jimma town”, submitted to Jimma University for the award of the Degree of project management & Finance (MA) and is a record of bona fide research work carried out by Mr. *Urgessa Gure Tufa*, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

*Main Adviser's Name*

*Date*

*Signature*

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*Co-Advisor's Name*

*Date*

*Signature*

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## **Abstract**

*Ethiopia is one of the developing countries which cannot accomplish its construction industry goals due to lack of identifying different major success factors. The aim of this study was to analyze the project management causes of project success factors in selected building construction projects in Jimma town. The study was conducted based on the data obtained from the clients, contractors, consultants, project Managers and subcontractors currently working on public building construction in Jimma town. A purposive sampling, where the researcher selects a sample based on their knowledge about the subject of the study, has been employed. A total of 38 sample respondents consisting of 6 clients, 8 Contractors, 8 Consultants 8 project managers, and 8 sub-contractors were involved in the study. The data needed to achieve the research objectives have been obtained from the respondents through questionnaire and interview; and the data were analyzed quantitatively and qualitatively through descriptive statistics. Accordingly, the results revealed that there was a high degree of agreement among the five categories respondent; Human-related factors were having the greatest influence for project successful implementation and achievement of project objectives. All the Spearman rank correlation coefficients were strong and positive which shows a high agreement between the rankings of the five categories respondents, Kendall's W was 0.942 which shows that there exists a high degree of agreement across the categories and Since the computed Chi-Square value ( $X^2 = 67.50$ ) is less than the Chi-Square critical ratio. There are fifty factors were considered in the economic model, Out of those 18 of the variables were founds to be significant at five percent significant level significant, while the remaining factors were not significant in explaining the variations in the dependent variable. The researcher forward to Project team are good communication with their project team, project managers must always bear in mind that successful project management techniques will contribute to the achievement of projects.*

*Keywords: Success Criteria, Project Management, Construction Management, Project Success Factors, project manager, clients, consultant, contractor, Construction public building construction*

## **Acknowledgements**

These acknowledgements attempt to thank people who in some way supported, guided and encouraged me along the way to completing this thesis. I would like to express my sincere gratitude to the following people. Without their assistance, encouragement, suggestion and commitment this work would not have been a reality. Firstly, I would like to express sincere gratitude and appreciation from the bottom of my heart to my *Main Advisor: - Arega Seyoum (PhD) and Co-Advisor: - Mohammed Getahun (M.Sc.)* for their great support, academic advice, discussions and suggestions.

I would also like to express my gratitude to my respected Instructors and communities of Jimma University for their enormous help during my two years stay in the university. Special thanks is due to all staff members of the College of Business and Economics. Sincere gratitude and appreciation goes to all professionals from Project owner, Project manager, Consultants and contractors who participated in the questionnaire, interview and discussions in this research. At large, a very special thanks to my family, for all their sacrifice, patience, love and support throughout my studies.

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## **Acronyms**

PM –	Project Management
PMI -	Project Management Institute
PFI -	Project Finance Initiative
BOT -	Build Operate-Transfer
QA -	Quality Assurance
$X^2$ -	<i>Chi-Square</i>
WBS -	Work Breakdown Structure
UAE-	United Arab Emirate

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1. Background to the Study

The project management is coordinating a process of interrelated functions such as planning, organizing and controlling construction activities for getting successful outcomes. Project management concept and techniques can be applied to any project ranging from simple task, office renovations or refurbishment to complex and complicated projects like the design and construction of an airport or shopping center (Babu & Sudhakar, 2015)

Vicente R.M.et.al (2018) accordingly their study in the field of project management, complexity is closely related to project outcomes and hence project success and failure factors. Subjectivity is inherent to these concepts, which are also influenced by sectorial, cultural, and geographical differences. While theoretical frameworks to identify organizational complexity factors do exist, a thorough and multidimensional account of organizational complexity must take into account the behavior and interrelatedness of these factors. Our study is focused on analyzing the combinations of failure factors by means of self-organizing maps (SOM) and clustering techniques, thus getting different patterns about the project managers perception on influencing project failure causes and hence project complexity. The analysis is based on a survey conducted among project manager practitioners from all over the world to gather information on the degree of influence of different factors on the projects failure causes. The prevalent order of influence is project factors, organization related factors, project manager and team members factors, and external factors.

Salykova, L.et al. (2019), stated that is increasing interest in project management studies since more companies became project oriented and apply project management principles in building their strategic business models. Project management is a broad subject with different knowledge areas that embrace variety of issues a project manager, a team, organizations and experts have to deal with to succeed in project implementation. When we talk about concept of project success, primarily there are two project success concepts: project success and project management success. Many

researchers and professionals try to define the correct meaning of project success and project management success, yet it is challenging to make a strong difference between them due to their mutual nature. It is quite interesting to observe how the concept of project success have been developed through history, what kind of models were emerged and what methods researchers used to find the factors that lead to a project success.

Nicholas Chileshe, (2014) As much as they have good experience to manage the job properly, good Communication links and understanding their responsibilities the triangular success Project management will be achieved. The following are some definitions of "Project Success" in general and in construction. Effective project management in construction must vigorously pursue the efficient utilization of labor, material and equipment to improve labor productivity. In addition good project management in the field of construction should have an excellent project manager, expert site manager, and very good contractor having extensive experience in construction, professional subcontractors and good engineer sites. Project success does not just depend upon the performance of the project team. The success often is depending upon the contributions of function managers, suppliers, customers, contractors etc. The researcher mentioned above the project manager as a leader for the construction projects can be the most important person to lead the project to the success that is depending on his/her skills, knowledge and experience. As much as the project manager has experience will be very easy for him/her to reach the success, finish the project on time, within budget and a high quality of work.

The construction industry is considered to be one of the most important industries in an economy, as it interacts with nearly all fields of human endeavor. In many countries the construction industry has, however, attracted criticism for inefficiencies in outcomes such as time and cost over runs, low productivity, poor quality and inadequate customer satisfaction (Eriksson, 2008).

According to G.A Bekr, (2017) measuring the success or performance of any construction project is a very multifaceted process because modern construction projects are generally multidisciplinary in nature which involved participation of designers, contractors, subcontractors, specialists, construction managers, and

consultants. N. Ramlee, N.J.et al, (2015).Success in a construction project is the achievement of much better results than the expected or normally obtained in terms of cost, schedule, quality, & safety

A construction project is completed as a result of a combination of many events and interactions, planned or unplanned, over the life of a facility, with changing participants and processes in a constantly changing environment. The complexity, uncertainty and dynamics of most construction projects create difficulties for even the best project managers. Construction industry has complexity in its nature because it contains large number of parties as clients, contractors, consultants, stakeholders, shareholders and regulators (Navon, 2005).

Decision milestones are used to anticipate outcomes, risk management is done to prevent disasters and sequential iteration is employed to ensure that the desired facilities are available, yet projects still end up with schedule delays, budget overruns and compromised specifications (Meyer et al., 2002). Over time, projects have proved to be the drivers of business, investment and overall development.

Abteen Ijadi M et al.(2017) the construction industry is a significant motive for the economic and industrial developments in countries. Consequently, the success of the construction projects is crucial for any country because the failure of these projects imposes extreme costs to the economic and industrial development of the country. Thus, the identification of the critical success factors of the construction projects and ranking these factors has a major role in the success and failure of the projects. In this study, the critical success factors are determined through the survey of the literature and the set of critical success factors are considered as options. After that, questionnaire was prepared with respect to the criteria such as time, cost, quality, and safety, which are the measurements of the success and failure of the projects.

Bekker et al. (2015), Study that the South African construction industry has suffered the loss of many qualified middle management-level project managers in recent years. This has resulted in many young, inexperienced project managers being forced to manage large complex projects. In addition, senior project managers, who are still practicing locally, are too busy to mentor and guide the younger project managers,

due to the shortage of professionals in the local industry. Then the study done to identify the most important attributes that influence project success in the South African construction industry, by extracting a list of factors identified in the existing literature and grouping these factors.

Dr. Esayas A. et.al, (2016) the construction industry is one of the largest job creators in developing countries and is highly competitive. The high number of project failures suggests the existence of underlying major success factors which have not been identified. Major success factors are inputs to project management practice which can lead directly or indirectly to project success. Ethiopia is one of the developing countries which cannot accomplish its construction industry goals due to lack of identifying different major success factors.

Mostly, the criteria to measure construction project success are time, cost and quality and they play major role in the building industry. Different researchers have tried to determine the factors for a successful project for a longtime. Therefore, the challenge of how to handle a Construction project successfully has attracted substantial research attention in the past couple of decades. Lists of variables have been abounding in the literature; however, no general agreement has been made. This topic has since become a prolific research area since the study is valuable for professional, involved with PM services in general. Furthermore, because of pursuit of excellence in project delivery systems is not new, this research direction could thrive upon a rich legacy of many previous investigators. But, the concept of project success has remained ambiguously defined in the mind of the construction professionals, implying no agreement has been reached on the key project success factors although some variables are common to more than one list.

Consequently, the to identify the major project management factors influencing the success of project implementation on selected public building construction projects in Jimma town. Based on the results of the survey, it is anticipated that patterns will emerge regarding the key performance indicators for measuring project management cause of project success in selected public building construction at Jimma town. These results could then be used in effecting economic, social, and political & successful projects.

## **1.2. Statement of the Problem**

Project management as a management discipline is relatively new, and more so complex and dynamic. The knowledge gap that exists within the profession has been the greatest undoing in managing projects. However, it is premised that the clear understanding of such critical missing information, will enable successful management of projects. Therefore, the challenge of how to handle projects successfully has attracted substantial research attention in the recent past.

Minimal of knowledge on key project success factors leaves project managers guessing on how to deliver successful projects by navigating through the complex yet unfamiliar “terrain” of project management. This has led to either stalled or failed projects. Similarly, for the few projects that get completed, they are associated with; scope creep, cost overruns, poor workmanship or project time delays (Navon, 2005).

Consequently, arising from creation of “white-elephant” projects, huge resources are wasted, business opportunities lost, customers get dissatisfied and the overall development is retarded among others. Research reveals that construction projects do not succeed as initially planned due to the volatility and complexity of projects and its delivery mechanism. Generally, past industry experiences show that, medium to large size projects appear as the frequent victims because project complexity fluctuates proportionately with the increase in project size. The consequences can be costly and lengthy, with the worst outcomes often leading to undesirable litigation engagements. Developing countries have higher rate of low project performance than developed countries (Lim and Alum, 1995).

Murat et al. (2015) indicated that a great emphasis has taken place to identify and analyses the factors that have been affecting the success and the failure of construction projects in recent decades. As a project-based industry, construction has heavily invested in such research. Moreover, the construction industry suffers the most to meet deadlines and budgets limits. The objective of this paper is to identify the critical success factors in construction industry. The study focused on United Arab Emeritus. In order to achieve this objective, 25 project success factors were identified by reviewing related literature. The factors were assessed for their impact and

contribution to the actual performance of the projection three criteria: schedule, cost, and quality.

Most researchers discussed the increased challenges and decreasing performance of the construction industry (Teicholz et al., 2001). Anderson (1984) cited in Boynton and Zmund (1984) observed that key success factors can be used by managers and organizations to help achieve high performance. However, it is recognized that research on project success factors needs further efforts. Previous studies have presented either too general or too specific success factors that portends certain difficulties when applied in practice, especially in developing countries where management information system (MIS), including state-of-the-art managerial skill is not available.

Therefore, the success factors need to be clearly defined, so that they can be readily and consistently employed for future projects. Evidences have proved most construction projects in developing countries suffer overrun in cost and time. Initially, project success was referred to as reaching the objectives and the planned results in compliance with predetermined conditions of time, cost and performance. As knowledge in project management field developed, the “golden triangle” was considered not enough to define project success. Project success was recognized to be a complex, multi-dimensional concept encompassing many attributes (Mir, Pennington, 2014). The importance attached by project managers to project success criteria and the associated rates of project success were assessed for different types of projects, industries and traits of project managers and Projects are unique, reason why project success criteria differ from one project to another (Ralf Müller and Rodney Turner, 2007).

Major success factors are inputs to project management practice which can lead directly or indirectly to project success. Ethiopia is one of the developing countries which cannot accomplish its construction industry goals due to lack of identifying different major success factors. Major success factors require special attention from management owing to their impact on project performance (Zawawi et al., 2014).



Previous researches have shown that construction projects represent a unique set of activities that must take place to produce a unique product (Kerzner, H. 1998). However, the success of a project is judged by meeting the criteria of cost, time, safety, resource allocation, and quality as determined in the initial planning process. In spite of an obvious gap between project success and completion, a direct connection between them still exists. This study was which factors is more effecting public building projects success. Numbers of studies raise a question of a bottleneck in researches in this area related to project management cause of success projects. Therefore, the purpose of the current study is to identify project management causes of project success factors in selected building construction projects in Jimma town.

### **1.3 Research Questions**

- 1) To what extent do project procedures factors influence the success of building construction projects at Jimma town?
- 2) To what extent do the project management factors influence the success of Building construction projects at Jimma town?
- 3) To what extent do the human-related factors influence the success of Building construction projects at Jimma town?

### **1.4. Objective of the Study**

#### **1.4.1 General Objective**

The main objectives of this study was to identify the key project management causes of project success factors in selected public building construction projects in Jimma town

#### **1.4.2 Specific Research Objectives**

- i. To establish the project management factors that influence success of Building Construction projects in Jimma town
- ii. To pinpoint the project procedures factors that influence success of Building Construction projects in Jimma town.
- iii. To identify human-related factors that influence success of Building construction projects in Jimma town.

### **1.5. Significance of the Study**

Public building Construction projects in the Ethiopia suffer from many problems and complex issues in performance because of many reasons and factors. This study was aimed at identifying the management project success factors in the selected public Building construction projects, and to uncover the underlying relationships between the independent variables and dependent variable identified in this research the causal relationships, once identified, would be a useful piece of information management the projects successfully. This means, the findings were useful to building construction professionals operating in Jimma town put in place key factors that can lead to good project performance. For foreign practitioners entering Ethiopians projects the study would assist them in focusing on the more important factors project management cause of project success to achieved good project outcomes the knowledge and understanding of project success factors. The also study was identified the rank factors project management cause project success case of public building construction Jimma town.

### **1.6 Scope of the Study**

This paper was proposed to study of the project management cause success project of public Building construction in Jimma town. The study was limited to selected public Building construction in Jimma town and the data was collected from May to April 2020. As it is discussed in the problem statement there are many causes that affect the performance of a construction project. This study mainly focuses on the determinate of project success factors of project management cause success of public building construction project. The research is thus confined to the construction project specifically to the public building construction project currently, and whilst the conclusions has made an effort to generalize the findings. Even though the research aimed on the national level, due to time and financial limitation, therefore it focused on Public building construction projects in Jimma town.

### **1.7 Limitation of the Study**

Adequate and reliable information is important to undertake any kind of survey. And hence precaution was taken in designing the questionnaires to avoid biases. Moreover,

briefing was given about the purpose of the study, and explanation was given on some questions. However, unwillingness and carelessness from some construction officials while giving documents was the shortcomings that were encountered. Finally, the problems which will face in this study are time shortage and difficulty of getting documents in the construction office.

### **1.8. Organization of the Study**

The organization of this study consists of five chapters. The first chapter of the study project management causes project success in projects and overview of topics description of background of the study, statement of the problem, the general and specific objective of the study, and significance of the study, scope of the study. The second chapter contains literature review which is related to topics of the study. Chapter 3 presents research design and methodology. Chapter 4 presents results and analysis. Finally, conclusions, recommendations and future research are presented in chapter five

# CHAPTER TWO

## 2. REVIEW OF RELATED LITERATURE

This chapter presents the literature review on factors that influence success in large construction projects. The literature discussed is a summary of research findings of other researchers who have carried out their research in the same field of study so as to provide a theoretical foundation underpinning the study variables. A discussion is made of the concept of project success criteria, a review of empirical studies on the various factors, conceptual framework and finally the research gap.

### 2.1 Theoretical Literature

#### 2.1.1 Project Success Criteria

A construction project is commonly acknowledged, as successful when it is completed on time, within budget, and in accordance with specifications and to stakeholders' satisfactions. Functionality, profitability to contractors, absence of claims and court proceedings and "fitness of purpose" for occupiers, has also been used as measures of project success (Takim, R. and Akintoye, 2002). As mentioned above, these days organizations are project based meaning that the work they do is split into programmers of projects designed to deliver the organization's strategies and add value. It is essential to identify and manage good projects. Developing or identification of success factors has dominated the field of PM from 1980 s to date. Many researchers have tried to a certain extent to identify success factors for PM.

Among researchers are Kerzner (1987), Pinto and Slevin (1987), Pinto and Slevin (1989), Clarke (1999) Cooke Davis (2002) and Muller and Turner (2003). From literature review, different studies have categorized the general success factors differently; One school of thought have classified them into five major groups of independent variables namely: Project-related factors, project procedures, project management actions, human-related factors, and external environment, while another group has categorized them into seven main categories: these include:-(1) Project management factors; (2) Procurement related factors,(3) Client related factors; (4)

Design team-related factors; (5) Contractor-related factors; (6) Project manager-related factors; and (7) Business and work environment-related factors. Another research study grouped the factors into the following; Strategic, structural, technical and the managerial factors. The former school of thought that classified the success factors into seven major groups seems comprehensive enough and precise. Therefore, this report adopted it.

### **2.1.2 Key Factors for Project Success**

Critical success factors (CSFs) are inputs to project management practice which can lead directly or indirectly to project success. It encompasses many elements, which have to be synchronized to ensure the project delivery on time. The purpose of this study is to identify the extent of the relationship between CSFs and project performance. The research findings will be expected to assist the organization in evaluating the performance of project management. Finally, the conceptual framework was developed by identifying five (5) variables for project success namely Project Management Action, Project Procedures, Human Factors, External Issues and Project Related Factors. (Alias, Z., Zawawi, E., Yusof, K., & Aris. 2014)

Several researches on factors affecting construction project success have proposed either general factors (Sanvido et al., 1992) or specific factors (Chua et al., 1999). In building construction, Sanvido et al. (1992) found four CSFs: (1) a well-organized and cohesive facility team; (2) a series of contracts allowing to encourage the various specialists to behave as a team without conflicts and to allocate risk and reward correctly; (3) experience in various aspects of similar facilities; and timely, valuable optimization information from related parties in the planning and design phases.

According to Heagney (2012), the most important thing in the delivery of an efficient project is to assess the overall project. A review with appropriate standard is able to identify the research problems as well as determine the factors related to the topic. Therefore, it is helpful for the managers or the project initiators in order to develop and deliver effective projects by controlling the movement of the project with the target that the organization is aimed to achieve and then start to execute the project. On the other hand, it is evident that despite of the best efforts given by the companies, most of the projects are failing to reach their goals. While the managers tried to

identify the reasons behind the failure of the projects, which took them many months to design and launch, it is found that the team members or the project executioners do not have essential training or facilities. In this context it can be said that implementation of Project Management Methodologies can identify the factors that contribute in the failure of the project prior to the starting of project work. Henceforth, it is beneficial in order to complete and deliver projects successfully.

In construction projects, Ashley (1986 cited in de Wit, 1988) identified seven success factors and six success criteria. These success factors are planning effort (construction) planning effort (design), project manager goal commitment, project team motivation, project manager technical capabilities, scope and work definition and control systems. Rehman, T. & Ogunlana (2009) studied in critical success factors in large scale construction projects in Thailand. Their study emphasized that success factors vary across various projects. Their findings revealed project planning and control, project personnel and involvement of client's critical factors influencing project success.

Ann et al. (2006), their study, investigated on CSFs in construction project briefing. Briefing process is prerequisite to achieving success in project performance. This process involves the interpretation of clients' actual views and requirements to project participants. Their study considered open and effective communication, clear and precise briefing documents, clear intention and objectives of client and clear project goal and objectives as critical success factors. Ugwu et al. (2007) identified nine top critical success factors that would act as enablers for successful implementation of ICT projects in construction as cost of development, top management support, availability of appropriate tools, development team knowledge and understanding of construction processes, ease applications, clear definition and understanding user, clear communication, standardization issues and change management of organization level.

Marterella (2007) reviewed over 50 business processes and disclosed eight critical sales success factors influencing business performance as selection, performance management, skills assessment, defined solution offerings, demand creation, qualifying, proposal clarity, and existing client expansion.

Jaselkis and Ashley (1988) identified the determinant factors in order to achieve budget, schedule and outstanding project performance. They identified 27 factors and grouped the success factors into four headings, which included project manager's capabilities, experience and authority, the stability of project team, project planning and control effort. After analyzing the information from 78 projects by logistic regression, they identified 'reducing team turnover' and 'program constructability as the two key factors required for achieving project success on construction works.

Jaselkis and Ashley (1991) investigated the impact of the project team, planning and control allots as they relate to achieving 'overall' project success, better-than expected schedule performance and better-than-expected budget performance. As in previous research, this research also used the discrete choice model as the analysis method.

The results demonstrated that the key success factors affected the project outcomes differently. For example, increasing the number of budget updates' has better schedule and overall project performance. Implementation of a constructability program' seems to have a significant impact on achieving overall project success and better schedule performance - especially on fixed-price contracts. 'Reducing team turnover' has more significant impact on improving budget performance than it does in achieving better schedule or overall project performance. Chua et al. (1997) used another method to analyses the data derived from Jaselkis and Ashley (1988)'s research. They used neural networks as the analyzing method focusing on budget performance only. The final model identified eight factors which were most important for budget performance. These eight factors included (1) number of organizational levels from the project manager to the craft workers, (2) amount of detailed design completed at the start of construction, (3) number of control meetings during the construction phase, (4) number of budget updates, (5) implementation of a constructability programs, (6) team turnover, (7) amount of money expended on controlling the project and (8) the project manager's technical experience.

Kog.et al. (1999) replicated Chua et.al. (1997)'s research, but they aimed at identifying the key determinants for construction schedule performance. Like Chua et al., (1997)'s research, they also used the data derived by Jaselkis and Ashley in 1988. The key determinants included (1) time devoted by the project manager to specific

project, (2) frequency of meetings between the project manager and other project personnel, (3) monetary incentives provided to the designer, (4) implementation of constructability program and (5) project manager's experience on projects with a similar scope.

Chan and Kumaraswamy (1997) have determined and evaluated the factors causing delays for construction projects in Hong Kong. They have identified 83 hypothesized delay factors and grouped them into eight categories. The main reasons for delay were analyzed and ranked according to different groups classified on the basis of (a) role of the parties in the local construction industry (i.e. whether clients, consultants and contractors) and (b) the type of projects. They collected data from 167 local construction organizations and analyzed it by using the relative impact index method in order to rank the determinant delay factors for different types of construction projects. The results indicate that the five principal and common causes of delays are: poor site management and supervision, unforeseen ground conditions, low speed of decision making involving all the project team, client initiated variations and necessary variations of works.

Distinguishing the characteristics of the success factors and the issues which influence the success factors for construction project has also been popular topic. Kothari (1986) and Chan (1992) identified the characteristics of the project manager in construction management. Kothari (1986) identified the characteristics of a successful project manager as leadership, technical knowledge and experience, communication, planning and organization, motivation and personality. Chan (1992) identified the additional characteristic of co-coordinating and controlling.

Enshassi et.al.(2006) In Africa studied causes of contractor's business failure in developing countries. These were grouped together to only five main groups which are: managerial, financial, business growth, business environment and political factors. Managerial factors are mainly related to experience, decisions, procurement, control, productivity, communication and claims factors; financial factors .are mainly related to loans, cash flow profit, expenditures, material wastages, equipment cost and usage, and variation order ;business growth factors are mainly related to managerial development, size of projects, type of work and number of projects; business



environment factors are mainly related to regulations, awarding, economy, owner involvement and accounting practices and political factors are mainly related to delay, closure, lack of resource, high cost of materials, banks policy and dealing with suppliers. The results showed that political group is the most important influencing factor on contractor's business failure in Palestine. Otherwise, Business growth and Business environment had been ranked as the lowest influencing factors on failure.

Previous studies from Nigeria have revealed that soft factors have been applied in project delivery in Nigeria but poor project performance has also been recorded. This has resulted to low productivity growth which runs across all industrial sectors including Nigerian Construction Industry (Adenikinju and Ayonrinde, 2001). Malladi (2007) stipulated that enhancement of project performance will bridge productivity gaps. Adenikinju (2005) graded productivity performance in Nigeria to be below average.

His findings revealed technical inefficiency as a major influence to the decline. The result showed that technical efficiency declined by -1.29 percent per annum for the period of 1962-2000 while technical change declined by -1.01 percent annually over the same period. Yer and Tha (2006) found out through a survey in India that two most critical success factors are commitment of participants' and owners' competence. Executive support, user involvement, experienced project manager, clear business objectives, minimized scope, standard software infrastructure, firm basic requirements, formal methodology and reliable estimates were found out as the nine top success factors influencing project performance (Gartner group, 2004).

In Gaza strip, there are many construction projects fail in performance. There are many constructed projects fail in time performance, others fail in cost performance and others fail in other performance indicators. In 2006 there were many projects which finished with poor performance because of many evidential reasons such as: obstacles by client, no availability of materials, roads closure, amendment of the design and drawing, additional works, waiting the decision, handing over, variation order, amendments in Bill of Quantity and delay of receiving drawings (UNRWA, 2006 and 2007).

Amaka (2011) studied the critical success factors influencing construction project performance in Nigeria. The research survey demonstrated the operating environment has vital role in determining the critical success factors influencing project performance of a project. The result revealed six critical success factors which can influence project performances in Nigeria. These factors were objective management, management of design, technical factors, top management support and risk management.

Various attempts have been made by different researchers to determine critical success factors in construction (Beale & Freeman, 1991; Pinto & Slevin, 1987).

The literature abounds with lists of variables supposedly influencing the quality of a building project. There are some variables common to more than one list, but there is certainly no general agreement on the variables. Review of this previous research reveals some common thread of variables as affecting the quality of a building project. The generally perceived factors that influence quality performance can be grouped under the headings of business related factors project procedures, project management actions and human-related factors.

## **2.2 Empirical Literature**

### **2.2.1 Project Procedures**

Quality performance has been considered as a function of the procedures adopted during the construction process (Serpell and Alarcon, 1998). Those procedures comprise the concept of procurement, form and the method of tendering. The fragmented nature of the construction industry, the fact that no two construction projects are identical and the resulting ephemeral nature of the project organization places great dependence on the project team in setting up the building process and bringing the project to a successful conclusion (Davenport, 1995). To ensure success, the selection of the most appropriate organization for the design and construction of the project requires early and particular attention.

In the main, the construction team will be appointed under competition through competitive tendering process. Sometimes, the head contractor may be appointed by

negotiation on the basis at a lee. In cases where the design and construction is done as a complete package, both may be let by competition. The selection procedures applied to the members of the project team are therefore by no means always the same. It was noted from previous I research that competitive tendering can adversely affect the outcome of major projects and the number of separate contracts is related to the chances of success. Different selection methods will pose different levels of risk to the project team members (Kumaraswamy and Dissanayaka, 1998, Chan, 1995). Systems such as competitive tendering would involve higher degree of risk to the team member, whereas cost reimbursement contracts would be low risk bearing by comparison.

Jersey and Blanchard (1982) have also identified the importance of clear goal definition to management success. Sidwell (1984) echoes this by advocating that clients who get the best results are those who provide the building team with well-defined specialized needs and are able to become closely involved with the building process. All these suggest that a clear and well-defined goal will lead to a more successful outcome on project performance. Project management action is a key for project success (Hubbard, 1990). Jaselskis and Ashley (1991) suggested that by using the management tools, the project managers would be able to plan and execute their construction projects to maximize the project's chances of success. Then, the variables in project management include adequate communications ,control mechanisms, feedback capabilities ,troubles hooting, coordination effectiveness, decision making effectiveness, monitoring, project organization structure, plan and schedule followed, and related previous management experience (Chua et al., 1999; Walker and Vines, 2000). A number of attributes will affect this factor, including the communication system, control mechanism, feedback capabilities, planning effort, organization structure, safety and quality assurance program, control of subcontractors' works, and finally the overall managerial actions.

Dierkmann and Girard (1995) identified the factors leading to contract disputes. This project identified the effect of different project characteristics, which included people, process and project aspects, on the occurrence of contract disputes .The findings of this work was based on logic regression analysis of data on the frequency and severity

of disputes on 159 construction projects. The results concluded that all three issues played a role in influencing the likelihood of contract disputes, but the 'people' issue held the key to avoiding contract disputes.

Evaluation related to the construction parties and studying their influence on the project success is also another favorite topic. Kometa et al. (1995) researched on the pre-contract and evaluation process. They found that clients who conducted an internal audit of their organizations before embarking on the briefing process, would generally have a higher level of success Hatush and Skitmore (1997) researched into the pre-qualification for contractors. The aim of their research was to investigate the perceived relationship between 20 contractor selection criteria (CSC) currently in use and project success factors (PSFs) in terms of time, cost and quality involving a sample of eight experienced construction personnel.

A number of researchers identified the importance of procurement factors (Kumaraswamy and Chan 1999; Walker and Vines 2000). Dissanayaka and Kumaraswamy (1999) defined the scope of procurement as the framework within which construction is brought about, acquired or obtained.

Therefore, two attributes are used to measure this factor; they are procurement method (selection of the organization for the design and construction of the project) and tendering method (procedures adopted for the selection of the project team and in particular the main contractor). There has also been research which has identified the success factors that influence the performance of certain procurement strategies.

Toing et al. (1992) did the first research in this area. They identified the critical success factors in whining build operate-transfer (BOT) contracts. Cheng et al. (2000) identified the critical success factors for Project Finance Initiative (PFI) contracts and partnering projects respectively. Construction materials can be purchased by two procedures, either purchasing directly, or purchasing for entire lump sum contract. However, purchasing materials before due time is very important in the construction, because the delay in purchasing will delay the completion date, and interrupt the schedule. Consequently, the contractor will be exposed to penalty which might sometimes cause contractor to fail (Phua and Rowlinson, 2004).

A change of procurement procedures is, however, impeded by clients' habitual behavior (Laedre et al., 2006). Although procurement procedures need to be tailored to enhance the fulfillment of different project objectives, clients tend to choose those procurement procedures they have a habit of using, regardless of any differences between projects. Earlier research efforts in this area have been limited to the investigation of how a single or a few specific procurement alternatives affect one or two project objectives. In order to achieve successful governance of construction projects a holistic and systemic approach to procurement procedures is crucial (Eriksson, 2008).

### **2.2.2 Project Management Factors**

Project management is the integral of the entire construction project functions which include coordination of subcontractors, scheduling, cost control, labor relation, billing, purchasing, expending, and other functions related to the project. In Construction Company, project manager is in charge of these functions. The use of project management techniques is very important in the construction industry, because the coordination and use of the many types of labor, skills, materials, and equipment's which are used in construction; require daily application of proper project management techniques (Phua and Rowlinson, 2004).

The managerial system is primarily concerned with decision making for planning and controlling organizational endeavor. The managerial subsystem can be seen as spanning the entire organization by relating the organization to the environment, setting the goals, developing comprehensive strategic, and operational plans, designing the structure and establishing control processes (Kast and Rosenzweig, 1985). An integral element of the managerial task is organizational decision making choosing an overall strategy, setting specific objectives, designing structures and processes, selecting people, delegating responsibility, evaluating results and initiating changes.

Sitwell (1982) advocated that the degree of project management actions can be reflected in the range and type of control mechanisms set up for the particular problem. At one end of the range will be a very low control situation, where neither: professional design team, drawing specifications, and documentation, nor standard

form of contract exists. Minor works may fall into this category. On the other hand a high control situation may exist if detailed documentation is administered through a system of regular meeting, monitoring and inspections Sitwell (1982) concluded that managerial control (classed as project management actions) is a key element in achieving project success, being significantly related to all measures of success Ireland (1983) found similar results for managerial action. Rowlinson (1988) concluded that high level of administrative ability in the project team leads to reduced time overruns, which in turn leads to increased satisfaction.

Increased complexity, uncertainty, and time pressure in construction projects have increased the need for cooperation among different project actors (Anvuur and Kumaraswamy, 2007).

Traditionally ,relationships are, however, very competitive and adversarial in the construction industry, which to a large extent is due to the customary procurement procedures potentially causing many problems in all stages of the buying process. Therefore, in order to take advantage of collaboration, procurement procedures are one key improvement area and can contribute substantially to project success (Eriksson, 2007). Intensive communication is a central factor in leading and integrating people and taking decisions to create a successful project (Laufer et al,1996).Thus, there is need to establish an effective information system for construction projects so that every right and concerned person can access and share ideas. More broadly speaking, “shared project vision” is impossible when there is poor communication among project stakeholders. As people become better informed and more aware of what is happening in their project, they will become more involved and committed to project's progress, and as a consequence, become better motivated (Clarke, 1999). Regardless of research scope and context, cooperation is consistently ascribed to be a vital determinant of construction project success (Phua and Rawlinson, 2004).

Frequent progress meetings are, therefore, inevitable. “What is going on” is communicated to the parties. Then, corrective and preventive actions are timely applied to ensure good project performance. Proper project monitoring and control system is impossible without effective progress meetings. A project has a chance to be

completed successfully when the project plans are updated regularly. Moreover, in order to ensure project success, the plans simple, with the right level of detail that can encourage a project to be reviewed readily (Clarke, 1999).

Community involvement is another factor in the communication component. It has been found to be an important factor in previous studies (Awakul and Ogunlana, 2002). Large-scale construction projects are usually fraught with controversy. Therefore, a supportive and understanding community is necessary for smooth implementation. This cannot be achieved unless the project information is shared adequately. Yeo (1995) noted that a large infrastructure project needs support and understanding from the community affected by the project especially during the construction period. He added that managing public reactions and opinions and understanding public attitudes are an integral part of the project management's responsibility. It is then essential that the project participants should truthfully share the project information and obtain different public perspectives regarding their project.

Assem Al-Hajj and Mario M. Zraunig (2018) accordingly, there is a need to decode the role of successfully applied project management methodologies on project success. This paper examines the current status of project management methodologies and their influence on the elements of project success. Although projects are managed since ancient times, a thorough literature review reveals that the theoretical cornerstones of project management methodologies are not yet agreed upon. Project success depends on project management success and the success of the end-product. This represents the micro and macro perspective of project success, the boundary of which inspires polarized reactions. Project success is influenced by many different factors, outside the control of project management. The influence of project management tools and techniques on project success depends on the practitioners' training, the timing and level of implementation achieved, whereas the human factor plays an essential part for achieving project success. This research concludes that project management success represents one of two essential ingredients for achieving project success, therefore, positively influencing project success.

### **2.2.3 Human-Related Factors**

Chua et al. (1999) defined project participants as the key players, including project manager client, contractor, consultants, subcontractor, supplier, and manufacturers. Walker (1995) considered influence of client and client's representative as a significant factor on construction time performance. The client-related factors concerned with client characteristics, client type and experience, knowledge of construction project organization, project financing, client confidence in the construction team, owner's construction sophistication, well-defined scope, owner's risk aversion, client project management (Dissanayaka and Kumaraswamy, 1999).

The project manager is another key stakeholder in a construction project and his competence is a critical factor affecting project planning, scheduling, and communication (Belassi and Tukel 1996)- Variables under this factor consist of the skills and characteristics of project managers their commitment, competence, experience, and authority (Chua et al. 1999). A construction project requires team spirit; therefore team building is important among different parties. Team effort by all parties to a contract owner, architect, construction manager contractor, and subcontractors a crucial ingredient for the successful completion of a project (Hassan 1995).

Competence is another prerequisite for the success of construction projects. The component includes utilization of up-to-date technology, proper emphasis on past experience, multidisciplinary/competent project team, and awarding bids to the right designer/contractor. Large construction projects need certain kinds of technology, but selecting the right technology may be problematic, especially when the project team is incompetent. Technology transfer has often been the focus of discussions, yet developing countries still use obsolete technology (Eriksson, 2008). Possession of modern technology is a critical factor for success and sustenance in today's business environment. A serious challenge to construction industries in developing countries is their inability to adopt or adapt established best practices already working in other countries (Ngowi, 2002). Additionally, although public-sector clients in developing countries and some donor agencies support construction technology transfer, it faces



several problems. It is therefore, obvious that the right technology needs the right people to select, manage and utilize it.

Proper emphasis on past experience and multidisciplinary/competent project team are success factors proposed in many textbooks and research works (Loo, 2002). Project teams themselves, not project managers, deliver projects and shape the implementation of the project.

A team consisting of all necessary specialists, professionals and experts is able to piece integrative decisions based on seeing the picture as a whole, and executes them later with greater pace. Proper project planning and control require project teams to utilize appropriate project management techniques and tools. On large construction projects in developing countries, it is extremely difficult to assemble adequate and capable professionals to direct projects to success.

Thus, it is not surprising that these factors are perceived as having high impact on project success. The involvement of many parties is a dominant characteristic of construction projects (Eriksson, 2008). If one of the parties is not capable to act within his/her role, the project is likely to fail. It is, therefore essential to ensure that the bidding process can help single out the right designers, contractors and other parties to effectively transform project ideas into reality. A recent study by (Long, 2003) conducted in Vietnam found that problems responsible by designers/consultants and contractors had very high frequency and influence on large construction projects. It can be concluded that these participants play vital roles in running projects and directing them to success or failure. Commitment to project and top management support are the other issues related to the commitment component grouping.

It has been recognized as one of the most critical factors for the successful completion of projects in numerous studies (White and Fortune, 2002; Sanchez and Perez, 2002). The responsibility of top management toward the project is important and its commitment and support is a crucial requirement for project success (Munns and Bjeirmi, 1996). It is noted that top management should be understood to mean top management of all concerned project parties.

Top management support demonstrates visibly how strong the commitment to the project is. For example, project members usually do not see project management as something to help them but rather something which is mandatory, serving little useful purpose. As such, motivation is prerequisite to ensure comfortable working environment within and around project sites. This does not axiomatically exist without commitment from the top management of all project parties.

#### **2.2.4 Summary of the Literature and Knowledge Gap**

Generally for construction projects have found that the projects are becoming bigger and bigger, while construction tasks have become more complicated and diversified. The construction industry is dynamic in nature due to the increasing uncertainties in technology; budgets, and development processes. Now days, construction projects are becoming much more complex and difficult of project management cause project success. The project team is facing unprecedented changes. In a new competitive environment, growing construction enterprises need not only to pay attention to changes in their external product market, but also to form their unique core competitiveness through integration of internal resources and accumulating knowledge and abilities it had lack explain Relative Importance Index Analysis and Ranking Success Factors on the previous research. This is the only way for them to remain in a successful position in the industry and turn their core competitiveness into excellent project management. Factors of various aspects affect construction contractors' competitiveness. In many countries, the construction industry frequently receives criticism regarding poor quality and customer satisfaction, frequent conflicts and disputes among different actors and cost and schedule overruns in projects. Construction projects are mostly characterized by high complexity; customization and uncertainty coupled with long duration. Such characteristics require collaboration and coordination among many different actors. This study therefore looked at the key because that influence success in Building construction projects Jimma town.

### **2.3 Conceptual Framework of the Study**

The various variables affecting the factors are identified in the previous section. Variables in the each group are interrelated. A variable in one group can influence a variable in there and vice versa. To study how these factors affect project success

separately and hypothesized that “Project success is a function of project procedures, project management actions and human-related factors and they are interrelated. For a project procedures comprising of procurement, method of tendering, selection of the most appropriate organization for the design and construction of the project requires early and particular attention.

Also important are various project management actions which include coordination of subcontractors, scheduling, cost control, labor relation, billing, purchasing, expending, and other functions related to the project should be streamlined to ensure the project stick to the plan.

Finally, human-related factors which touch on the project participants including project manager, client, contractor, consultants, subcontractor, supplier, and manufacturers are also important in project success.

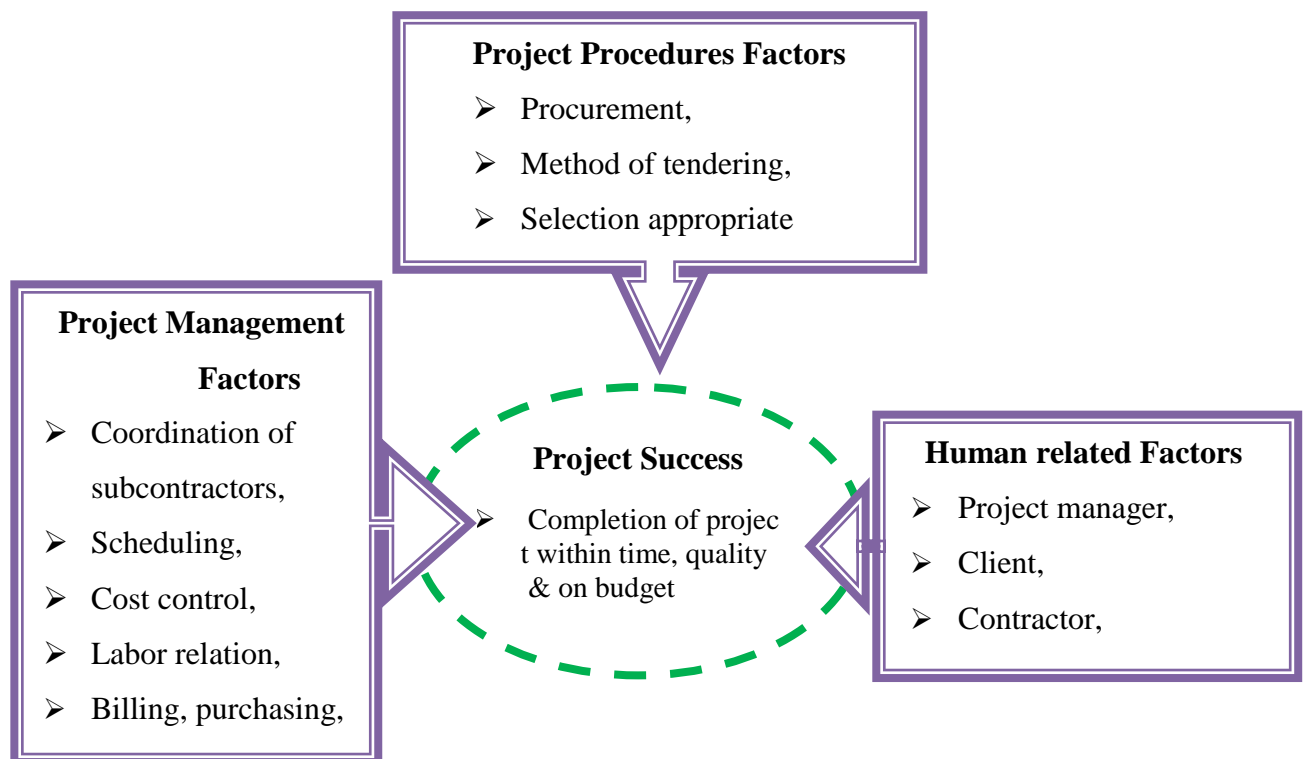


Figure 2.1 Conceptual framework of the study

# CHAPTER THREE

## 3. RESEARCH METHODOLOGY

This chapter deals with description of the study area, research design, sources and type of data, population of the study, sampling, instrument of data collection, procedure of data collection, study variables, data processing, analysis and interpretation.

### 3.1 Research Design

Zikmund (2010) defines research design as an arrangement of conditions for collection and analysis of data in a manner that it aims to combine relevance to research purpose with economy in procedure. Research design is the program that guides the researchers in the process of collecting, analyzing and interpreting the data. The purpose of the study was to identify the project management causes of project success in selected public building construction projects of Jimma town.

The researcher employs that explanatory research design with a cross sectional data to give in depth information on the factors affecting loan repayment of borrowers.

Kothari (2008) defines research design as the plan and structure through which the answers to research questions obtained. A research plan is the general scheme of the research. In other word research design described as the general plan employed in data collection necessary for the fulfillment of research objectives.

Research design categorized based on the input or the outcomes of the study. Based on input the research design categorized as qualitative or quantitative. The researcher is used quantitative type of research design or approach to conduct the study because the actual collected data can be quantified interims of number and consequently quantitative data analysis technique employed.

In other way research design also categorized as descriptive, explanatory, analytical, analogical and experimental research design. Based on the objective of the study, this study is followed explanatory type of research design because the way it analysis and the expected result behavior.

Methods of data collection and the tools, methods of data analysis, variable specification and the RII will be used to rank the relative importance index of the different major success factors. These rankings made it possible to cross compare the relative importance of the factors as perceived by the group of respondents.

The data collection through these methods was analyzed and the results were presented. In this study, a questionnaire was developed to assess the perceptions of the respondents on project procedures, project management & human related factors on the relative importance of project management causes of selected public Building construction which research design descriptive, was used in Jimma town.

### **3.2 Method Data Collection**

Primary data were used for the project management causes of project success of selected public Building construction projects in Jimma town.

The primary data represents firsthand information obtained from respondents who works for the teams of projects; those are project management, Manager, subcontractor, clients, contractors and consultants. This study was used the primary sources obtained from the client, contractor subcontractor and consultant in project construction of Jimma town.

### **3.3 Study Population and Sampling**

Target populations of this study were the members of public building construction project management under supervision level of Zone, Regional state and federal government at Jimma town. The population of the research consists of the clients, contractors, consultants; administrative staff, Managers and subcontractors currently working on building construction. According to the ministry of urban development and Construction in accordance with the powers and duties conferred on it by the definition of powers and duties of the Executive Organs of the Federal Democratic Republic of Ethiopia Proclamation No. 691/2010. The one building Construction Project level I & II the number of staff was five professional members and one client. The researchers selected eight public building construction projects each project have 6 members & all projects have 48 total populations.

Sample size determination from a universe of the study as all members of a public Construction projects or hypothetical set of people or events to which an investigation wishes to generalize results purposively for this study because it's when compared to its base line plan. This was considered the population to estimate the number of questionnaires to be distributed to respondents to consider the response.

Therefore study of used Purposive or judgmental sampling is a strategy in which particular settings persons or events are selected deliberately in order to provide important information that cannot be obtained from other choices (Maxwell, 1996). It is where the researcher includes cases or participants in the sample because they believe that they warrant inclusion.

A purposive sample is where a researcher selects a sample based on their knowledge about the study and population. The participants were selected based on the purpose of the sample, hence the name. Participants were selected according to the needs of the study (hence the alternate name, deliberate sampling); applicants who do not meet the profile were rejected.

Note - But out of 48 total population size the researcher was collected information only from 38 respondents. The remaining 10 were not incorporated in the study

### **3.4 Study of Variables & Data Analysis Techniques**

#### **3.4.1. Study of Variables**

The independent and dependent variables affecting the factors are identified in the previous section. Independent Variables within each group are affecting dependent variable. The Variables in one group can influence a variable in others, and vice versa are directly & indirectly factors dependent variable. The study seeks to assess how these factors affect project success separately and collectively it is relative ranking that "Project success" is a function of factors of project procedures, project management actions and human-related factors and they are interrelated.

#### **Independent variables**

- ✓ Project Management Factors
- ✓ Human related Factors

- ✓ Project Procedures Factors

**Dependent variable**

- ✓ Project Success

**3.4 .2 Data Analysis Techniques**

**3.4.2.1 Relative Importance Index Model**

Qualitative methods of data analysis were employed in order to answer the research questions and to attach the objectives. The quantitative data are collected, coded, tabulated, analyzed, described and interpreted in a manner that it supports the finding of the study in terms of frequency, percentage and mean value (to compute the proportionality of individual responses of the items by assessing the scale value to each of the 5(five) scale responses of the Relative Importance Index (RII) is a statistical method which is used to determine the ranking of different project success factors. As this survey was designing to investigate the relative importance of various major success factors, the method is adopted in this study within various groups. The RII five-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree) was adopted and transformed the relative importance indices for each success factors as follows;

$$RII = \frac{\sum_{i=1}^5 PiUi}{N(n)}$$

Where:-

RII= Relative importance index

*Pi* = Respondent’s rating of cause of project management construction projects factors

*Ui* = Frequency of respondents placing identical ranking on the cause of construction projects

N = Sample size, which in this case (clients=6, Contractors=8, Consultants=8, project managers=8 and sub-contractors=8)

n = the highest attainable score on the cause of construction projects factors, in this case is 5. The highest value of RII, the more important success factor and it is the major success factors show on the Clients, Contractor, Consultant, sub-Contractor and project managers.

### 3.4.2.2 Spearman's Rank Correlation Model

The Spearman's Correlation Coefficient, represented by  $\rho$  or by  $rR$ , is a nonparametric measure of the strength and direction of the association that exists between two ranked variables. It determines the degree to which a relationship is monotonic, i.e., whether there is a monotonic component of the association between two continuous or ordered variables.

Monotonicity is "less restrictive" than that of a linear relationship. Although monotonicity is not actually a requirement of Spearman's correlation, it will not be meaningful to pursue Spearman's correlation to determine the strength and direction of a monotonic relationship if we already know the relationship between the two variables is not monotonic. On the other hand if, for example, the relationship appears linear (assessed via scatter plot) one would run a Pearson's correlation because this will measure the strength and direction of any linear relationship. Sometimes there doesn't exist a marked linear relationship between two random variables but a monotonic relation (if one increases, the other also increases or instead, decreases) is clearly noticed. Pearson's Correlation Coefficient evaluation, in this case, would give us the strength and direction of the linear association only between the variables of interest. Here it come the advantage of the Spearman Rank Correlation methods, which would instead; give us the strength and direction of the monotonic relation between the connected variables. This can be a good starting point for further evaluation. The Spearman's rank correlation (Fellows & Liu, 2008) indicates the level of agreement on the ranking among groups of respondents participating in the study. It can be calculated using the following equation:

$$\rho = 1 - \frac{6 \sum_{i=1}^n d_i^2}{n(n^2 - 1)}$$

Where:  $\rho$  = level of consensus between each pair (clients and Contractor, clients and Consultant, clients and sub-Contractor, clients and project manager, project managers and Contractor, project managers and Consultant, Contractor and sub-Contractor, Contractor and Consultant and sub-Contractor and Consultant of groups ( $0 \leq \rho \leq 1$ );  $d$  = difference in the ranking of a cause; and  $n$  = number of ranking places.



### 3.4.2.3 Kendall's Coefficient of Concordance Model (W)

Kendall's W statistic (*sometimes called the Coefficient of Concordance*) is a nonparametric statistic. It's used to assess agreement between different raters, and ranges from 0 to 1. Zero is no agreement at all between raters, while 1 is perfect agreement. The statistic is calculated either on an interval scale or on an ordinal scale.

$$W = \frac{(m - 1)\bar{\rho} + 1}{m}$$

Where:-

m = the number of categories of respondents

$\bar{\rho}$  = the mean of the pairwise spearman correlations

If the W Statistic is 0, that means everyone ranked the list differently (or randomly).

If the W Statistic is 1, then everyone ranked the list in exactly the same order.

### 3.5 Linear Regression Analysis

Multiple regression analysis takes into account the inter-correlations among all variables involved. This method also takes into account the correlations among the predictor scores. Multiple regression analysis more than one predictor is jointly regressed against the criterion variable (Cohen & Swerdlik, 2002). This method is used to investigate the factors project management cause of project success.

#### 3.5.1 Regression functions

The equation of multiple regressions on this study is generally built around two sets of variable, namely dependent variables (project success) and independent variables (Project Management Factors, Human related Factors and Project Procedures Factors). The basic objective of using regression equation on this study is to make the researcher more effective at describing, understanding, predicting, and controlling the stated variables.

$$Y_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e_i \text{ or}$$

$$PS = \beta_0 + \beta_1 HRF + \beta_2 PPF + \beta_3 PMF + e_i$$

Where;:- **PPF**:-Project Management Factors, **HRF**:- Human related Factors and **PMF**:- Project Procedures Factors,  $e$  = model error term,  $\beta_0$ , Constant and  $ps$ :- **Project Success**

### **3.6 Validity and Reliability Test**

This section presents test of validity of questionnaire according to the pilot study. Validity refers to the degree to which an instrument measures what it is supposed to measure (Polit and Hungler, 1985). Validity has a number of different aspects and assessment approaches. Statistical validity is used to evaluate instrument validity, which include criterion-related validity and construct validity. To ensure the validity of the questionnaire, two statistical tests were applied. The first test was Criterion-related validity test (Spearman test) which measures the correlation coefficient between each team and the whole team and the measures the correlation coefficient between one field and all the fields of the questionnaire that have the same level of similar scale.

Reliability refers to the consistence, stability, or dependability of the data. The reliability of an instrument is the degree of consistency which measures the attribute it is supposed to be measuring (Polit and Hunger, 1985). The less variation an instrument produces in repeated measurements of an attribute, the higher its reliability. Reliability can be equated with the stability, consistency, or dependability of a measuring tool. The test is repeated to the same sample of people on two occasions and then compares the scores obtained by computing a reliability coefficient (Polit and Hunger, 1985). The designed questionnaire was randomly distributed to three principal construction team Client, contractor, Project Manager, Consultant and sub- Contractor on the project public Building Construction in Jimma town. The pilot survey data was then analyzed and the results used for comprehensiveness and suitability for full study. Cronbach's coefficient alpha (George and Mallery, 2003) is designed as a measure of internal consistency, that is, do all items within the instrument measure the same things. Cronbach's alpha was used here to measure the reliability of the questionnaire between each field. The normal range of Cronbach's coefficient alpha value between 0.0 and + 1.0. The closer the Alpha is to 1, the greater the internal consistency of items in the instrument being assumed.

Then the second study's to analysis was an investigator measures a variable, the wants to be sure that the measurement provides dependable and consistent results (Cooper & Schindler, 2003). A reliable measurement is one that if repeated a second time gives the same results. If the results are different, then the measurement is unreliable

(Mugenda & Mugenda, 2003). To measure the reliability of the data collection instruments an internal consistency technique using Cronbach's alpha was applied. Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability. An alpha coefficient of 0.75 or higher indicated that the gathered data is reliable as it has a relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population. Reliability analysis of the questionnaire is made through Spss demographic variables of the questionnaire are excluded for the purpose of this analysis variables are included the Cronbach's alpha of the questionnaire is 0.777 that means 77.7% of respondents have similar way of understanding for the questionnaire that is filled by them

### **3.7 Ethical Consideration**

As this study were participated individuals in assessing factors project management cause of project success on public building construction currently activities. The consideration of these issues is necessary for the purpose of ensuring privacy as well as the security of the participants. These issues are identified in advance and so as to present problems that was arise during the research process. Among the significant issues that must be considered includes confidentiality and data protection.

# CHAPTER FOUR

## 4. RESULTS AND DISCUSSIONS

### Introduction

This chapter presents the collected data using questionnaire and completed by the employees of the organization and go on to discuss the research findings. The researcher used graphs and charts to display the findings in order to make it easier for the reader to analyze the results.

As explained earlier in methodology part of this research paper, the nature of the research is descriptive which includes the survey and fact finding inquires with regard to factors affecting Project Management Causes of Project Success. Quantitative analysis for both qualitative and quantitative data techniques were used to analyze the collected data. This is because the range from creating simple tables or diagrams which shows frequency of occurrences through establishing statistical relationships between variables by using simple statistical modeling.

Accordingly, for this particular study, analysis of data is presented by using percentages, and tables. The study examined the outcomes of surveys with selected legally Case of public building Construction Projects in Jimma Town. So, the analysis is concerned with the practical application of Project Management and the challenges faced in its collection effectiveness with appropriate solutions for the constraints. The chapter is organized into two parts. The first part presents the results while the second part shows the analysis of data obtained from the different sources.

### 4.1 Demographic background information of respondents

The study conducted survey of public Building Construction Projects in Jimma Town. It also conducted survey with Construction officials managed level employed at Jimma Zone, Regional state & Federal government in Jimma town. In the study, questionnaires were distributed in the period March–April 2020 for thirty eight professionals who were working public building construction projects in Jimma town.

**Table4. 1 Gender of Respondents**

Questions	Category	Frequency	Percent
<b>Gender</b>	Male	30	78.9
	Female	8	21.1
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

As shown in table 4.1.established that (78.9%) of the respondents were male as compared to (21.1%) of females. Thus, the findings indicate that majority of the respondents were male.

**Table4. 2 Responsibility /Job status/ of Respondents**

Questions	Category	Frequency	Percent
<b>Job Status</b>	Client	6	15.8
	Contractor	8	21.1
	Consultant	8	21.1
	Sub-Contractor	8	21.1
	Project manager	8	21.1
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

As shown in table 4.2, Responsibility of job status of respondents where Client (15.8%), contractor (21.1%), Consultant (21.1%), sub-Contractor (21.1%) & project manager (21.1%) respondents. Hence, in the study this information suggests the study that all respondents have information and also sure to get representative response from them.

**Table4. 3 Relevant work experiences of Respondents**

Questions	Category	Frequency	Percent
<b>Relevant work experience</b>	Up to 5 years	15	39.5
	5-10 Years	12	31.6
	10-15 Years	5	13.2
	Above 15 years	6	15.8
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

Table 4.3 shows relevant work experience on building construction projects of respondents where Up to 5 years' worked experience (38.5 %), 5-10 Years (31.6 %),

10-15 Years (13.2 %), and above 15 years (15.8%). Thus, the findings indicate that majority of the respondents are relatively experienced.

**Table4. 4 Educational qualifications of Respondents**

Questions	Category	Frequency	Percent
Educational qualification	Diploma	9	23.7
	1st Degree	22	57.9
	2nd Degree	7	18.4
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

Table 4.4 shows that Educational qualification of the respondents (57.9%) are university degree graduates, followed by those of master's holder's with (18.4%), and others (23.7%) of the respondents are Diploma holders. The study shows that greater percentage of the workers in education sector is well educated to provide responses on performance appraisal system surveys.

**Table4. 5 Professions of Respondents**

Question	Category	Frequency	Percent
Profession Respondent	Civil Engineer	28	73.7
	Hydraulic Engineer	1	2.6
	Structural Engineer	2	5.3
	Business Administration	3	7.9
	Others	4	10.5
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

As shown in table 4.5. The Profession qualification of Respondents was Civil Engineer (73.7%), Hydraulic Engineer (2.6%), Structural Engineer (5.3%), Business Administration (7.9 %) & Others Profession qualification (10.5%). Thus, the findings indicate that majority of the respondents Profession qualification were Civil Engineer.

**Table4. 6The supervision of projects**

Question	Category	Frequency	Percent
The supervision of projects the level	Zone	7	18.4
	Regional state	4	10.5
	Federal government	27	71.1
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

As shown in table 4.6.The supervision of projects the level Federal government (71.1%), Zone (18.45) and Regional state (10.5%) of the respondents. Thus, the findings indicate that majority of the respondents were under supervision Federal government.

**Table4. 7 Process or completion of projects on time**

Question	Category	Frequency	Percent
completion of projects on time	Yes	19	50.0
	No	19	50.0
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

Table 4.8 shows that the projects progress is on the schedule, the half (50 %) of the respondents asserted that the projects progress was on the schedule, while the remaining (50% %) respondents confirmed that project progress was not according to the time, it shows delays.

**Table4. 8 Process or completion of projects on budget**

Question	Categorical	Frequency	Percent
completion of projects on budget	Yes	25	65.8
	No	13	34.2
	Total	38	100.0

Source SPSS output from survey data (April, 2020)

Table 4.8 Shows that the projects progress is within the budget limits, the majority (65.8 %) of the respondents asserted that the projects progress was within the budget, while the remaining (34.2 %) respondents confirmed that project progress was not according to the budget.

**Table4. 9 The quality standard of progress projects Respondents**

Question	Category	Frequency	Percent
The quality of completed projects	Yes	29	76.3
	No	9	23.7
	Total	38	100.0

Source: SPSS output from survey data (April, 2020)

Table 4.9 Shows that the projects completed was within the quality standard limits , the majority (76.3%) of the respondents asserted that the projects progress was within the quality standard, while the remaining (23.7 %) respondents confirmed that project progress was a lack quality standard according to planned.

## **4.2 Ranking factors on Project Management Causes of Project Success**

The results of the RII value had a range between  $0 < RII \leq 1$ . The highest value of RII, the more important success factor and it is the major success factors. Therefore indexes calculated were ranked for the Clients, Contractors, Consultants, sub-Contractors and Project managers.

$$RII = \frac{\sum_{i=1}^5 PiUi}{N(n)} \dots\dots\dots 1$$

Where;-RII = relative importance index

$Pi$  = respondent’s rating of cause of project management construction projects factors

$Ui$  = frequency of respondents placing identical ranking on the cause of construction projects

$N$  = sample size, which in this case (Clients = 6, Contractor = 8,



Consultant = 8, Project managers = 8 and sub-Contractors = 8)

n = the highest attainable score on the cause of construction projects factors, in this case is 5.

**Table4. 10 RII Ranking factors on clients Respondents**

No	FACTORS	RII Clients	Rank
1	Leadership skills of project manager	0.967	1
2	Organizing skills of project manager	0.967	1
3	Feedback capabilities	0.958	3
4	Formal dispute resolution process	0.958	3
5	Holding of regular meetings	0.958	3
6	Project manager's commitment to meet quality, cost and time	0.958	3
7	Owner's construction sophistication	0.944	6
8	Client's confidence in cons team	0.933	7
9	Project Manager's competence	0.933	7
10	Project contract mechanism	0.917	9
11	Communication systems	0.917	9
12	Developing an appropriate structure	0.9	11
13	Client's experience	0.9	11
14	Adequacy of plans & specifications	0.9	11
15	Effectiveness of cost control system	0.9	11
16	Motivating skills of project manager	0.9	11
17	Project Manager's authority	0.9	11
18	Clear objectives and scope	0.875	17
19	Monitoring and updating plans	0.875	17
20	Prior project management Experience	0.875	17

Source: SPSS output from survey data (April, 2020)

As the above table 4.10 shows the result clients respondent ranked cause factors where Leadership skills of project manager of contractor, Organizing skills of project manager of contractor, Feedback capabilities producer, Formal dispute resolution process management, Holding of regular meetings management, Project manager's commitment to meet quality, cost and time of contractor are series highest factors affecting on Project Success of public building Construction Projects in Jimma town.

**Table4. 11 RII Ranking factors on Contractor Respondents**

No	FACTORS	RII Contractor	Rank
1	Implementing QA programs	0.958	1
2	Owner's construction sophistication	0.958	1
3	Project design complexity	0.958	1
4	Feedback capabilities	0.938	4
5	Monitoring and updating plans	0.938	4
6	Prior project management experience	0.938	4
7	Risk identification and allocation	0.938	4
8	Top management support	0.938	4
9	Up to date technology utilization	0.938	4
10	Upfront planning efforts	0.938	4
11	Motivating skills of project manager	0.925	10
12	Accurate initial cost estimates	0.917	11
13	Holding of regular meetings	0.906	12
14	Contractor's cash flow	0.9	13
15	Clear objectives and scope	0.875	14
16	Communication systems	0.875	14
17	Formal dispute resolution process	0.875	14
18	Adequacy of plans & specifications	0.875	14
19	Decision making effectiveness	0.85	18
20	Project manager's commitment to meet quality, cost and time	0.844	19

Source: SPSS output from survey data (April, 2020)

As the above table 4.11 shows the result contractors respondents ranked cause factors where Implementing QA programs, Owner's construction sophistication, Project design complexity, Feedback capabilities of producer, Monitoring and updating plans, Prior project management experience, Risk identification and allocation, Top management support, Up to date technology utilization & Upfront planning efforts check lists are series highest factors affecting on Project Success of public building Construction Projects at Jimma town respectively.

**Table4. 12 RII Ranking factors on Consultant Respondents**

No	Factors	RII. constant	Rank
1.	Project contract mechanism	0.97	1
2.	Commitment to project	0.97	1
3.	Communication systems	0.97	1
4.	Coordination effectiveness	0.97	1
5.	Effective Strategic Planning	0.97	1
6.	Formal dispute resolution process	0.97	1
7.	Client's ability to define roles	0.97	1
8.	Motivating skills of PM	0.97	1
9.	PM authority to take day-to-day decisions	0.97	1
10.	Feedback capabilities	0.94	10
11.	Safety program	0.94	10
12.	Clear objectives and scope	0.94	10
13.	Implementing QA programs	0.94	10
14.	Prior project management experience	0.94	10
15.	Client's knowledge of cost project organization	0.94	10
16.	Design team experience	0.94	10
17.	Organizing skills of PM	0.94	10
18.	Developing standard procedures	0.93	17
19.	Upfront planning efforts	0.92	18
20.	Client's Project managements	0.92	18

Source: SPSS output from survey data (April, 2020)

As the above table 4.12 shows the result The Consultant respondents ranked cause factors where Commitment to project management, Communication systems management, Coordination effectiveness management, Effective Strategic Planning, Formal dispute resolution process, Motivating skills of project manager, Project contract mechanism such as lump sum, unit price, cost plus, etc. and Project Manager's authority to take day-to-day decisions were series highest factors affecting on Project Success of public building Construction Projects at Jimma town.

**Table4.13 RII Ranking factors on subcontractors Respondents**

No	Factors	RII Sub-Contractor	Rank
1)	Organizing skills of project manager	0.98	1
2)	Project contract mechanism	0.97	2
3)	Commitment to project	0.97	2
4)	Developing standard procedures	0.97	2
5)	Accurate initial cost estimates	0.97	2
6)	Contractor experience	0.95	6
7)	Project Manager's authority	0.95	6
8)	Project manager's commitment to meet quality, cost &time	0.95	6
9)	Project Manager's competence	0.95	6
10)	Formal dispute resolution process	0.94	10
11)	Effective Strategic Planning	0.93	11
12)	Project design complexity	0.93	11
13)	Communication systems	0.91	13
14)	Control mechanism	0.9	14
15)	Risk identification and allocation	0.9	14
16)	Adequacy of plans & specifications	0.9	14
17)	Contractor's cash flow	0.9	14
18)	Effectiveness of cost control system	0.9	14
19)	Clear objectives and scope	0.88	18
20)	Developing an appropriate structure	0.88	18

Source: SPSS output from survey data (April, 2020)

The table 4.13 shows that subcontractors respondent ranked cause factors where Organizing skills of project manager, Accurate initial cost estimates, Developing standard procedures/absence of bureaucracy, Commitment to project, Project contract mechanism such as lump sum, unit price, cost plus, etc. Project Manager's competence, Contractor experience, Project Manager's authority to take financial decision, selecting key team members, etc. are series highest factors affecting on Project Success of public building Construction Projects at Jimma town respectively.

**Table4. 14 RII Ranking factors on PM. Respondents**

No	Factors	RII PM.	Rank
1.	Implementing QA programs	0.96	1
2.	Owner's cont. sophistication	0.96	1
3.	Project design complexity	0.96	1
4.	Feedback capabilities	0.94	4
5.	Monitoring and updating plans	0.94	4
6.	Prior project management Experience	0.94	4
7.	Risk identification and allocation	0.94	4
8.	Top management support	0.94	4
9.	Up to date technology utilization	0.94	4
10.	Upfront planning efforts	0.94	4
11.	Motivating skills of PM	0.93	10
12.	Accurate initial cost estimates	0.92	11
13.	Holding of regular meetings	0.91	12
14.	Contractor's cash flow	0.9	13
15.	Clear objectives and scope	0.88	14
16.	Communication systems	0.88	14
17.	Formal dispute resolution process	0.88	14
18.	Adequacy of plans & specifications	0.88	14
19.	Decision making effectiveness	0.85	18
20.	Project manager's commitment to meet quality, cost and time	0.84	19

Source: SPSS output from survey data (April, 2020)

The table 4.14 shows that the project Manager respondents ranked cause factors where Implementing QA programs, Owner's construction sophistication, Project delivery system such as design-bid-build, design build, Feedback capabilities, Monitoring and updating plans, Prior project management experience, Risk identification and allocation, Top management support, Up to date technology utilization & Upfront planning efforts are series highest factors affecting on Project Success of public building Construction Projects at Jimma town respectively.

**Table4. 15 Summery of overall ranking respondent**

No	Factors	RII Summary	AOR
1	Communication systems	0.918	1
2	Implementing QA programs	0.909	2
3	Formal dispute resolution process	0.903	3
4	Motivating skills of project manager	0.895	4
5	Feedback capabilities	0.892	5
6	Holding of regular meetings	0.89	6
7	Project Manager's authority	0.89	7
8	Project manager's commitment to meet quality, cost & time	0.875	8
9	Contractor experience	0.871	9
10	Organizing skills of PM	0.87	10
11	Project Manager's competence	0.869	11
12	Prior project management experience	0.864	12
13	Project contract mechanism	0.856	13
14	Effective Strategic Planning	0.852	14
15	Accurate initial cost estimates	0.85	15
16	Clear objectives and scope	0.85	16
16	Effectiveness of cost control system	0.85	16
18	Owner's construction Sophistication	0.849	18
19	Adequacy of plans & Specifications	0.845	19
20	Developing standard procedures	0.844	20

Source: SPSS output from survey data (April, 2020)

As shown in table 4.15 above, generally the top ten overall rankings for the causes of project management success have series highest factors are Communication systems, Implementing QA programs, Formal dispute resolution process, Motivating skills of project manager, Feedback capabilities, Holding of regular meetings, Project Manager's authority to take day-to-day decisions, Project manager's commitment to meet quality, cost and time, Contractor experience and Organizing skills of Project Manager are the top ten summery series highest factors affecting on Project Success of public building Construction Projects at Jimma town respectively.

**Table4. 16 The Project procedures ranking factors Respondents**

No	Factors	RII Project procedures	Rank
1	Feedback capabilities	0.89	1
2	Project contract mechanism	0.86	2
3	Control mechanism	0.8	3
4	Safety program	0.79	4
5	Project bidding	0.79	5
6	Project delivery system	0.75	6
7	Quality assurance program	0.74	7

Source: SPSS output from survey data (April, 2020)

As above table 4.16 shows the result Project procedures ranking factors respondent ranked cause factors where Feedback capabilities, Project contract mechanism, Control mechanism, Safety program Project and bidding are five series highest factors affecting on Project Success of public building Construction Projects at Jimma town. Thus, the findings indicated that Project procedures are highest alack Feedback capabilities and Project contract mechanism control respectively.

**Table4. 17The Project management ranking factors Respondents**

No	Factors	RII P. Mgnt	Rank
1)	Communication systems	0.92	1
2)	Implementing QA programs	0.91	2
3)	Formal dispute resolution process	0.9	3
4)	Holding of regular meetings	0.89	4
5)	Prior project management experience	0.86	5
6)	Effective Strategic Planning	0.85	6
7)	Clear objectives and scope	0.85	7
8)	Developing standard procedures	0.84	8
9)	Commitment to project	0.84	9
10)	Upfront planning efforts	0.84	10
11)	Up to date technology utilization	0.83	11
12)	Monitoring and updating plans	0.83	12
13)	Risk identification and allocation	0.82	13
14)	Top management support	0.82	14
15)	Coordination effectiveness	0.82	15
16)	Developing an appropriate structure	0.81	16
17)	Decision making effectiveness	0.76	17
18)	Comprehensive Contract document	0.76	18
19)	Control of subcontractor work	0.76	18
20)	Adequate funding throughout the Project	0.73	20

Source: SPSS output from survey data (April, 2020)

As above table 4.17 shows the result Project management ranking factors respondent ranked cause factors where Communication systems, Implementing QA programs, Formal dispute resolution process, Holding of regular meetings and Prior project management experience are the five series highest factors affecting on Project Success of public building Construction Projects at Jimma town respectively.

**Table4. 18 The Human related ranking factors Respondents**

No	Factors	RII.HRF	AOR
1	Motivating skills of project manager	0.9	1
2	Project Manager's authority	0.89	2
3	Project manager's commitment to meet quality, cost and time	0.88	3
4	Contractor experience	0.87	4
5	Organizing skills of project manager	0.87	5
6	Project Manager's competence	0.87	6
7	Accurate initial cost estimates	0.85	7
8	Effectiveness of cost control system	0.85	8
9	Owner's construction sophistication	0.85	9
10	Adequacy of plans & specifications	0.85	10
11	Client's ability to define roles	0.84	11
12	Contractor's cash flow	0.84	12
13	Coordinating ability and rapport of project manager with contractors	0.83	13
14	Client's project management.	0.83	14
15	Client's ability to make decision	0.82	15
16	Project design complexity	0.82	16
17	Project Manager's authority to take day-to-day decisions	0.8	17
18	Leadership skills of project manager	0.8	18
19	Nature of client	0.8	19
20	Design team experience	0.79	20
21	Client's confidence in cons team	0.77	21
22	Client's experience	0.76	22
23	Client's knowledge of const. project organization	0.73	23

Source: SPSS output from survey data (April, 2020)

As above table 4.18 shows the result human related factors respondent ranked cause factors where Motivating skills of project manager, Project Manager's authority, Project manager's commitment to meet quality, cost and time, Contractor experience and Organizing skills of project manager are five series highest factors affecting Project Success of public building Construction Projects at Jimma town respectively.



**Table4. 19 The Groups specific objective ranking factors Respondents**

No.	Factors	RII Average the objective factors	Rank
1	Human-Related Factors	0.84	1
2	Project Procedures factors	0.82	2
3	Project Management Factors	0.82	3

Source: SPSS output from survey data (April, 2020)

In general, as shown in table 4.19 above, the majority of the respondents agreed that Human-related Factors have the greatest influence on the successful implementation and achievement of project objectives. According to the participants involved in the study, Project Procedure Factors ranked as the second most important factors in influencing the successful implementation of building construction projects at Jimma town; while Project Management Factors have been rated by the majority of the respondents as the third important factors in impacting successful accomplishment of building construction projects at Jimma town.

### 4.3. Spearman’s Rank Correlation Analysis

It is important an agreement Analysis to establish that the rankings provided by the clients, Contractors, Consultants, sub-Contractors, and Project Managers, were not due to chance or some form of bias but represent the true project management causes of success factors of public building construction projects at Jimma town. To do so, two methods were used Spearman rank correlation coefficient and Kendall’s coefficient of concordance. Both tests are non-parametric tests which mean the distribution does not necessarily need to be normal before they can be applied.

$$\rho = 1 - \frac{6 \sum_{i=1}^n di^2}{n(n^2-1)} \dots\dots\dots 2$$

Where:

$\rho$  = level of consensus between each pair

$d$  = difference in the ranking of a cause; and

$n$  = number of ranking places

The results of the computation showed a Spearman rank correlation coefficient are 0.99, 0.95, 0.98, 0.87, 0.944, 1, 0.758, 0.935, 1, and 0.87 for clients & Contractors, clients & Consultants, clients & sub-Contractors, clients & project managers, project managers & Contractors, project managers & Consultants, project managers & sub-Contractors, Contractors & sub-Contractors, Contractors & Consultants and sub-Contractors & Consultants respectively.

All ten coefficients are strong and positive which shows a high agreement between the rankings of the five categories. The pair with the highest agreement was (Contractor with Consultant) and (Project managers with Consultant) those of two pair it's indicates a perfect association of ranks.

#### 4.5 Kendall's Coefficient of Concordance analysis (W)

This is where Kendall's Coefficient of Concordance ( $W$ ) becomes useful. Kendall's  $W$  is directly related to the Spearman rank correlation coefficient (Legendre, 2005).

$$W = \frac{(m-1)\bar{\rho}+1}{m} \dots\dots\dots 3$$

$m$  = the number of categories of respondents

$\bar{\rho}$  = the mean of the pairwise spearman correlations

The computed Kendall's  $W$  is 0.942 which shows that there exists a high degree of agreement across the categories (Clients, Contractors, Consultants, sub-Contractors, and Project Managers) on the factors of project management causes of project success case public building construction in Jimma town.

#### 4.6 Test of Significance (Causes)

It is important to establish if the extent of agreement/disagreement across the categories is statistically significant. To do so the Chi-Square test was used.

First, we form a hypothesis:

Null Hypothesis =  $H_0$  = There is disagreement in rankings among the five categories

Alternate Hypothesis =  $H_1$  = There is an agreement in rankings among the five categories

The Chi-Square test is also a non-parametric test used to determine if a significant difference exists among the category rankings. There is a relationship between the Chi-Square value and Kendall's  $W$  shown in equation 4 (As outlined in Frimpong et al., 2003).

$$X^2 = m(n-1)W = \dots\dots\dots 4$$

Where:

- $m$  = the number of categories of respondents, which in this case is 5
- $n$  = the number of causes/factors, which in this case is 50 causes/factors
- $W$  = Kendall's coefficient which in this case is 0.942

The result of the computation is  $X^2 = 67.50$  and using the critical table for  $n=50$  and  $\alpha=0.05$  (that is 95% confidence interval), the Chi-square critical ratio =

$$X_{\alpha}^{2(n-1)} = X_{0.05}^{2(49)} = 307.83$$

**Decision Rule:**

Since the computed Chi-Square value ( $X^2 = 67.50$ ) is less than the Chi-Square critical ratio  $X_{\alpha}^{2(n-1)} = X_{0.05}^{2(49)} = 307.83$  we accepted the alternate hypothesis (H1) and concluded that there was high degree of agreement among the five categories on Project management causes of project success in the case of public building construction in Jimma town.

**4.7 Discussion of Linear Regression Results**

Prior descriptive studies have used different estimation methods based on the types of data to investigate the determinants of project management cause project success. The researcher used a standard linear regression model for the estimation in this study. Standard linear regressions is a most commonly used multiple regression type by which all predictors (independent) variables are entered in to equation simultaneously. Each independent variable is evaluated in terms of its predicting power, over and above what offered by all others independent variables. Consequently it's used to know how much variance in the dependent variable they will able to explain as a group of objectives. The advantage of using linear regression models is to make the study more effective at describing, understanding and predicting the stated variables.

The data for value of variables are computed from the respondents (project team) which collected through structured questionnaire in Jimma town. Therefore, the response computed by multiple regressions is carried out in this thesis to provide a comprehensive analysis about the factors project management cause of project success case public building construction project in Jimma town. The SPSS application version 16 was used here to run the linear regressions.

As stated the simple regression is used for to making the study more effective at describing, understanding and predicting the stated variables. Therefore, linear regression analysis used by the researcher and the results are displayed step wise as follows.

#### **4.8 Regression discussion**

The dependent variable is project success measured in terms of on time, on budget and within quality and the explanatory variables is Human-Related Factors (HRF), Project procedures factors (PPF) and Project Management Factors (PMF) measured with the most known proxies used in many related studies.

The beta values ( $\beta_i$ ) explain how much the variation in the dependent variable is explained by the estimated linear regression model. The regression based on the above model produced result shown on the following table and interpretation of the result are displayed on the paragraphs subsequent to it.

**Table 4.20 Summery Model**

Mo	Change Statistics						
	R	R Square	Adj.R <sup>2</sup>	Std. Error of the Estimate	R <sup>2</sup> Change	F Change	Sig. F
1	.996 <sup>a</sup>	.991	.974	.204	.991	55.528	.000

a. Predictors:

Project Management Factors , Project procedures factors , Human-Related Factors ,  
R-squared                      0.991                      F-statistics                      55.528  
Adjusted R-squared              0.974                      Prob (F-statistics)              0.000  
S.E. of regression                      0.204                      No. of observations              38

Source: SPSS output from survey data (April, 2020)

AS shown in Table 4.20 above the adjusted R squared is 97.4 which indicate that about 99.1 percent of the variability of project success is explained by the selected factors (Human-Related Factors, Project procedures factors and Project Management Factors). In other words, about 99.6 percent of the change in the dependent variable is explained by the independent variables that are included in the model and the remaining percent of project success are because of other factors that are not included in the model

**Table 4.21 ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	57.842	25	2.314	55.528	.000 <sup>a</sup>
	Residual	.500	12	.042		
	Total	58.342	37			

a. Predictors: (Constant), Project Management Factors , Project procedures factors , Human-Related Factors

b. Dependent Variable: project success

Source: SPSS output from survey data (April, 2020)

Table 4.22 Regression Result of Coefficients <sup>a</sup>

Model		Unstandardized Coefficients		Stand. Coefficients	T	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			L. Bound	U. Bound
1	(Constant)	2.331	.486		4.791	.000	1.271	3.390
	Control mechanism	-.419	.087	-.449	-4.815	.000	-.609	.230
	Feedback capabilities	.266	.114	.192	2.335	.038	.018	.514
	Safety program	1.015	.097	1.007	10.508	.000	.804	1.225
	Adequate funding throughout the Project	.489	.071	.585	6.853	.000	.334	.645
	Clear objectives and scope	.580	.155	.508	3.735	.003	.241	.918
	Control of subcontractor work	.788	.103	.896	7.627	.000	.563	1.014
	Coordination effectiveness	-1.177	.129	-1.103	-9.131	.000	-1.458	.896
	Developing an appropriate structure	-1.426	.087	-1.458	16.405	.000	-1.616	1.237
	Developing standard procedures	.466	.149	.402	3.126	.009	.141	.790
	Top management support	.531	.048	.551	11.048	.000	.426	.636
	Upfront planning efforts	.359	.086	.380	4.190	.001	.172	.545
	Client's project management	-.530	.069	-.587	-7.708	.000	-.680	.380
	Contractor experience	-.983	.135	-.870	-7.302	.000	-1.276	.690
	Effectiveness of cost control system	-1.393	.086	-1.360	16.212	.000	-1.581	1.206
	Motivating skills of project manager	1.167	.096	1.069	12.176	.000	.958	1.376
	PM authority to take decision,	.688	.145	.720	4.737	.000	.372	1.004
	Project Manager's competence	.808	.203	.724	3.985	.002	.366	1.250

a. Dependent Variable: project success

Source: SPSS output from survey data (April, 2020)

The estimated of Linear regression model are shown below in table 4.22 the 50 explanatory variables factors were considered in the economic model. Out of these 18 of the variables were found to be significant at one percent significant level and five percent significant level significant while the remaining factors were not significant in explaining the variations in the dependent variable.

**Project procedures factors** the t-statistics and sig.(p-value) show that the independent variables factors such as Control mechanism, Feedback capabilities and Safety program are significant at 5 percent to mean they are variables which can positively factors affect Project success

**Project Management Factors** The t-statistics and sig.(p-value) show that the independent variables factors such as adequate funding throughout the Project, Clear objectives and scope, Control of subcontractor work, Coordination effectiveness, Developing an appropriate structure, Developing standard procedures/absence of bureaucracy, Implementing QA programs, Monitoring and updating plans, Top management support and Upfront planning efforts are significant at 5 percent to mean they are variables which can positively factors affect Project success.

**Human-Related Factors** The t-statistics and sig.(p-value) show that the independent variables factors such as Client's project management, Contractor experience, Effectiveness of cost control system, Motivating skills of project manager, Project Manager's authority to take financial decision, selecting key team members & Project Manager's competence significant at 5 percent to mean they are variables which can positively factors affect Project success

#### **4.9 Hypothesis testing results**

The regression analysis used to test all the hypothesis weather they are Supported or not supported to hypothesis. The regression analyses are represented above table. Table shows the results of project management cause of project success on the public building construction projects.

The regression result Project procedures Variables to project success out Seven factors, three factors are passively significance (\* $P < 0.05$ ). Therefore, as per the findings, Project procedures factors does have positively the relationship between Project procedures factors and project success, leading to the accepted of hypothesis this result supports the hypothesis.

Project Management Factors Variables to project success, out twenty factors, twelve factors are positively significance (\* $p < 0.05$ ). Therefore, as per the findings, Project Management Factors does have positively the relationship between Project Management Factors and project success, leading to the accepted of hypothesis.

Human related factors variable to project success, out twenty-three factors, seven factors are positively significance (\* $p < 0.05$ ). Therefore, as per the findings, between human related factors and project success, leading to the accepted of hypothesis.



# CHAPTER FIVE

## 5. C ONCLUSIONS AND RECOMMENDATIONS

The following chapter presents a summary of the study comes up with conclusions based on the outcome of the data collected and analyzed with different methods. The chapter is organized into three sections. Section 5.1 conclusions, section 5.2 recommendations and 5.3 future research Direction

### 5.1 Conclusions

The objective of this study was to define the project management causes of project success factors that achieve the successful management triangle (on time, on budget &with quality), which must be taken into account a members of all people who involved in public building construction. These objectives must be through the accomplishments of the research using questionnaire survey. The sequential research approach of this study have identified fifty (50) factors affecting project management cause of project success, case public building construction in Jimma town. These factors were originated from different five categories of project success factors namely clients, Contractor, Consultant, sub-Contractor, &project manager.

Secondly the aim of this study was ranking the types of success factors which were identified under objective based their relative important index. Therefore the identified 50 factors were collected from literature review and further analysis was performed on the success factors by using Excel & SPSS to rank them according to the high significant effect on building projects.

Generally from the study group of objective factors human related factor is mostly influencing factors of project management success. These factors are put under three main factors:-

- ✓ Awarding bids to the right designer or contractor,
- ✓ Design team-related Factors
- ✓ *Contractor-related factors*

The researcher also used Spearman rank correlation coefficient and Kendall's coefficient of concordance. Both tests are a non-parametric test which means the distributions do not necessarily need to be normal before they can be applied.

The results of the computation showed that, a Spearman rank correlation coefficient are 0.99, 0.95, 0.98, 0.87, 0.944, 1, 0.758, 0.935,1, and 0.87. All ten Spearman rank correlation coefficients are strong and positive which shows a high agreement between the rankings of the five categories. The pair with the highest agreement was (Contractor with Consultant) and (project managers with Consultant) these of two pairs indicates a perfect association of ranks.

The computed Kendall's  $W$  is 0.942 which showed that there exists a high degree of agreement across the categories (clients, Contractor, Consultant, sub-Contractor, & project manager) of the factors project management cause project success case selected public building construction in Jimma town.

The computed Chi-Square value ( $X^2 = 67.50$ ) is less than the Chi-Square critical ratio  $X_{\alpha}^2(n-1) = X_{0.05}^2(49) = 307.83$ . We accept the alternative hypothesis (H1) and conclude that there was a high degree of agreement among the five categories on the causes of the factors. Project management caused project success case, of public building construction in Jimma. It would be great if we substantiate or validate the major findings and conclusions drawn from this study with the findings and conclusions of other similar prior studies made in Ethiopia and elsewhere.

The regression result Project procedures Variables to project success out Seven factors, three factors are passively significance (\* $P < 0.05$ ). Therefore, as per the findings, Project procedures factors does have positively the relationship between Project procedures factors and project success, leading to the accepted of hypothesis this result supports the hypothesis.

Project Management Factors Variables to project success, out twenty factors, twelve factors are positively significance (\* $p < 0.05$ ). Therefore, as per the findings, Project Management Factors does have positively the relationship between Project Management Factors and project success, leading to the accepted of hypothesis.

Human related factors variable to project success, out twenty-three factors, seven factors are positively significance (\* $p < 0.05$ ). Therefore, as per the findings, between human related factors and project success, leading to the accepted of hypothesis.

## 5.2 Recommendations

The purpose of the following recommendations is not to deeply address areas that need improvement project management success. The intention is only to point out some major issues that need consideration to enhance the current project management cause of public building construction projects. The analysis of the questionnaires has suggested the client, the contractor's subcontractors, project Manager and the consultants have contributed their own share in cause of project success. On the basis of the major findings of the study, the researcher forwarded the following points

- ✓ The project managers must always bear in mind that successful project management techniques will contribute to the achievement of projects.
- ✓ Project Manager should continuously manage on how projects utilize funds which is planned to be used in running projects.
- ✓ Project managers need to be aware of their project technology preferences and provide the tools and equipment to the project team as they can be more motivated.
- ✓ Project Management practice should be reinforced and all factors should be studied carefully in those knowledge areas whose factors are significantly challenged compared to other knowledge areas project success.
- ✓ Project procedures construction, evaluated feedback information, companies can uncover development targets and develop their own competencies.
- ✓ Project producer arranging Periodical meetings must be organized to facilitate the communication between all sectors balanced feedback capabilities forecasting planning.
- ✓ Project client must been seen when bidding making sure that the contract documentation is free of ambiguous terms of contract; errors and omissions; plans and specifications are adequately referenced and coincide with the terms of references before entering in to contract, Conducting proper investigation and giving adequate time in the design and preparation of documents and

recommended Conducting design reviews by highly qualified and experienced group of professionals.

- ✓ Clients when awarding bids to the right designer Project participants who have the best understanding of the work the engineers, scientists, systems specialists, architects.
- ✓ Contractors should apply effective site management system for different activities of the project so as to avoid rework of activities and low labor productivity that will result time and cost overrun.
- ✓ Project manager eliminating risky activities (minimizing system complexity, and reducing end-item quality requirements with take feedback from construction employee.
- ✓ Consultant should give high attention on empowering project managers in order to ensure that they have the skill and knowledge in the functions of planning,
- ✓ Consultant must be reporting progress construction for head office, evaluating design of process according to planning, controlling quality material, preparation of contract document, arranging contractor& service during construction.
- ✓ Contractors must running budgeting on time for subcontractors.
- ✓ Project team are good communication with their project team
- ✓ All Project parties and Stakeholders shall be involved actively starting from design stage and construction stage and this will help much in minimizing project delay and time and cost overrun.

### **5.3 Future Research Direction**

The focus of this study was on identifying the factors affecting Project Management Causes of Project Success the Case of public Building Construction Projects in Jimma Town.

It is the researcher's view that:

- Future research could investigate the other factors that affect public Building Construction Projects internal and external factors are not specified in this study.
- Detail study could be made on the identified Lists factors project activities and participants
- The same study can be conducted on other geographical areas of the country that is known to working building Construction Projects.

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## **Appendix A**

**Jimma University**

**College of Business and Economics**

**Department of Accounting and Finance**

**MA in Project Management & Finance Program**

I am a graduate student in the department of Accounting and finance in MA project management and Finance program, Jimma University. Currently, I am undertaking a research entitled, "Project Management Causes of Project Success Case of Building Construction Projects in Jimma Town". You are one of the respondents selected to participate on this study. Please assist me in giving correct and complete information to present a representative finding on the current status of the factors project management causes of project success of building construction projects in Jimma town.

I would like to assure you that the information you provide will be used only for the purpose of achieving academic award. Your involvement is regarded as a great input to the quality of the research results. Hence, I believe that you will enlarge your assistance by participating in the study. Your honest and thoughtful response is invaluable. Thank you in advance for your kind cooperation and dedicating your time.

Sincerely,

Urgessa Gure



**Instructions:**

- ❖ **No need of writing your name**
- ❖ For Likert scale type statements and multiple choice questions indicate your answers with a check mark (√) in the appropriate block.

Part One: General Information:

- Gender      A. male                       B. female
- Job Status or Responsibility of State respondent  
Client  Contractor  Consultant  sub-Contractor   
project manager
- Relevant work experience  
Up to 5 years  5-10 Years  10-15 Years  Above 15 years
- Educational qualification  
Diploma      1<sup>st</sup> Degree  2<sup>nd</sup> Degree  PhD
- Profession  
Civil Engineer  Hydraulic Engineer  Structural Engineer   
Water Supply Engineer  Business Administration  Others
- The Completion of projects within quality according to planning Organization?  
Yes  No
- The Constructions manage by the level  
Administrative town  Regional state  Federal government
- The Completion (process) of projects within on time according to planning Organization?  
Yes  No

9. The Completion (process) of projects within on budget according to planning Organization?

Yes  No

## **Appendix B**

### **Part Two:**

Dear Respondents;

*Assessment of Project Management Causes of Project Success: The Case of Selected Building Construction Projects in Jimma Town*

The following are in relation affecting *Project Management Causes of Project Success*

Indicate the importance of the following factors as key performance indicators by ticking the appropriate box as per your observation, Experience and knowledge as per the following rating (Likert Scales);The RII five-point scale, ranging from 1 (strongly disagree) to 5 (strongly agree) was adopted and transformed the relative importance indices for each success factors as follows;-

1 = strongly disagree,

2 = disagree,

3 = neutral,

4 = agree,

5 = strongly agree

<b>1. Project procedures factors on Project Management Causes of Project Success Case of Selected Building Construction Projects in Jimma Town</b>					
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No	Factors	Rating				
		5	4	3	2	1
1	Control mechanism					
2	Feedback capabilities					
3	Project bidding method (e.g. price based competitive bidding, negotiated bidding, best value bidding)					
4	Project contract mechanism (e.g. lump sum, unit price, cost plus, etc.)					

5	Project delivery system (e.g. design-bid-build, design build)					
6	Quality assurance program					
7	Safety program					

**2. Project Management Factors on Project Management Causes of Project Success Case of Selected Building Construction Projects in Jimma Town.**

No	Factors	Rating				
		5	4	3	2	1
1	Adequate funding throughout the Project					
.2	Clear objectives and scope					
3	Commitment to project					
4	Communication systems					
5	Comprehensive Contract documentation					
6	Control of subcontractor work					
7	Coordination effectiveness					
8	Decision making effectiveness					
9	Developing an appropriate structure					
10	Developing standard procedures/absence of bureaucracy					
11	Effective Strategic Planning					
12	Formal dispute resolution process					
13	Holding of regular meetings					
14	Implementing QA programs					
15	Monitoring and updating plans					
16	Prior project management experience					

17	Risk identification and allocation					
18	Top management support					
19	Up to date technology utilization					
20	Upfront planning efforts					

**3. Human-Related Factors on Project Management Causes of Project Success, Case of Selected Building Construction Projects in Jimma Town**

No	Factors	Rating				
		5	4	3	2	1
1.	Client's ability to define roles					
2.	Client's ability to make decision					
3.	Client's confidence in construction team					
4.	Client's experience					
5.	Client's knowledge of construction project organization					
6.	Client's project management					
7.	Nature of client (funding and organizational structure)					
8.	Owner's construction sophistication					
9.	Accurate initial cost estimates					
10.	Adequacy of plans and specifications					
11.	Project design complexity					
12.	Contractor experience					
13.	Contractor's cash flow					
14.	Coordinating ability and rapport of project manager with contractors/ subcontractors					
15.	Coordinating ability and rapport of project manager with owner/ owner representatives					
16.	Effectiveness of cost control system					
17.	Leadership skills of project manager					
18.	Motivating skills of project manager					
19.	Organizing skills of project manager					
20.	Project Manager's authority to take day-to-day decisions					
21.	Project Manager's authority to take financial decision, selecting key team members, etc.					
22.	Project manager's commitment to meet quality, cost and time					
23.	Project Manager's competence					

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**Thank Very Much you for your Response!**