JIMMA UNIVERSITY

JIMMA INSTITUTION OF TECHNOLOGY

SCHOOL OF GRADUATE STUDIES

FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

CONSTRUCTION ENGINEERING AND MANAGEMENT CHAIR

ASSESSMENT OF THE INFLUENCING FACTORS AND EFFECTS OF USING BUILDING UNDER CONSTRUCTION IN JIMMA CITY

A Thesis Submitted to, School of Graduate Studies, Jimma University, Jimma Institute of Technology, Faculty of Civil and Environmental Engineering in Partial Fulfillment of the Requirement for the Degree of Master of Science in Construction Engineering and Management

BY:

WUBSHET ADEME ALEMAYEHU

FEBRUARY, 2020

JIMMA, ETHIOPIA

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DECLARATION

I declare that this research entitled "ASSESSMENT OF THE INFLUENCING FACTORS AND EFFECTS OF USING BUILDING UNDER CONSTRUCTION IN JIMMA CITY" is my own original work, and has not been submitted as a requirement for the award of any degree in Jimma University or elsewhere.

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As research Adviser, I hereby certify that I have read and evaluated this thesis paper prepared under my guidance, by Wubshet Ademe Alemayehu entitled "**Assessment of the Influencing Factors and Effects of Using Building Under Construction in Jimma City**" and recommend and would be accepted as a fulfilling requirement for the Degree Master of Science in Construction Engineering and Management.

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ABSTRACT

The temporary nature of building construction projects indicates a definite beginning and ending time. In Ethiopia the current situation of the building construction projects does not perform as expected especially with respect to running the project with the sequential phases of construction of the project characteristics. Ethiopia has thus ratified Ethiopian building proclamation No.624, 2009 not to use building under construction before it has been inspected and ensured. This is so hence, using building under construction have high effect on project cost, time & quality of construction, impact on the safety of workers and end users of the working environments. However, there is increasing trend of challenge in running the construction and operation phases parallelly.

This study therefore, aims to assess the influencing factors and effects of using building under construction in case of Jimma city; which is limited to building constructions only. The study examines the practice on the influencing factors, social effect, and economic effect as well as rank the effects on the participant bodies of using building under construction through literature review, questionnaires and interview. Explanatory analysis was used to summarize and interpret the data by using MS-excel. The data analyzed was calculated using relative importance index (RII) accounting cost under estimation, financial difficulties by client, stakeholder's inexperience, inappropriate government policies and unfavorable contract clauses/agreement as independent variables and influencing factors and effect of using building under construction as dependent variables.

Accordingly, the findings indicate that the most frequent influencing factors to use building under construction in Jimma city ranked as: political influences, source of income for government in the form of taxation, bribery corruption, decreasing unemployment rate, source of revenue for the employee of the organization, inflation in the cost of construction materials, non-involvement of consultant for design and supervision and tender document preparation, attractive pressure on owner by increase source of revenue for the owner/client of the building, solving the scarcity of commercial center in the city and or needs of building, and source of revenue for the organization use the building. On the other hand, the negative social and economic effects of using building under construction ranked as; increased traffic flow, high noise generation, increased rate of accident onsite, air pollution dust, overcrowded site so difficult to manage materials on site and material on site are exposed to theft led to additional cost, high cost of accident on work force of the industry plus public who uses the service, decrease the productivity of employee of organizations because of disturbance on site, were identified from the finding. The study recommended that mainly the government or regulatory bodies should practice the role and regulation of construction legality accordingly. Consultant and supervisor should be assigned to follow up each construction projects to upgrade the knowledge in order to improve the culture of construction projects in Jimma City with respect to special considerations undertaken in the future projects.

Key words: Influencing factors & Effect of Building, Building under construction, Construction project, Jimma

ACKNOWLEDGEMENTS

First of all, I would like to thanks Almighty God for his unlimited support throughout my life.

Secondly, I sincerely thank my advisors, Eng. Bien Mercado Maunahan (Asst. Prof.) and Eng. Ahmed Nuredin Kelifa (MSc.) for their well discipline, exemplary guidance, expert advice and constant encouragement throughout this thesis writing.

Thirdly, Special thanks towards to my families and best friends for inexpressible help during my work.

Finally, I would like to thank Ministry of Education (MOE) for sponsor and financial support.

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ACRONYMS

AC	Actual cost
BAC	Budget at Completion
CPI	Cost Performance Index
CV	Cost Variance
EAC	Estimate at completion
EACT	Time Estimate at Completion
EEA	Ethiopian Economic Association
EU	European Union
EV	Earned Value
EVM	Earned Value Management
GDP	Gross Domestic Product
ISIC	International Standards Industrial Classification
LFS	Labour Force Survey
MoFED	Ministry of Federal and Economic Development
MOLSA	Ministry of Labour and Social Affairs
MoWUD	Ministry of Works and Urban Development
PM	Project Management
PPA	Public Procurement Agency
PV	Performance Value
RM	Risk Management
SPI	Schedule Performance Index
TOR	Time over Run
UAE	Union of American Engineers

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Construction has a history that is as old as human existence. In our country, as well as elsewhere in the world, the construction industry is one that has significant contribution to the development of the economy of a country.

Construction is an industry that has a great impact on the economy of all countries. It is very difficult to think of any development activity that does not involve construction. All infrastructure facilities needed for development, socioeconomic facilities and the very neighborhood we live in are all products of the construction industry. The role the construction industry plays in developing countries is quite significant. For example, in many developing countries, major construction activities account for about 80% of the total capital asset, 10 % of their GDP and; more than 50 % of the wealth invested in fixed assets (Jekale W. , 2004).

The success of any construction project is realized when a project is built on targeted project cost, time, quality, scope, safety requirement and with minimum conflicts. For a project to be successful the stakeholders need to ensure that the project is operating with their sequential phase of construction.

Construction projects represent a unique set of activities that must take place to produce a unique product. It might be characterized as complex, cost and time consuming and risky. However, construction projects are also dynamic and challenging which attracts capital, new technologies and brilliant brains (Didenko, 2008).

The temporary nature of projects indicates a definite beginning and ending time. The end is reached when the project‘s objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists (PMIBook, 2008).

Housing building projects particularly represent one of the largest sectors of the construction industry in the most developing economies of the world.

In recent years, Ethiopia infrastructure development and urbanization are booming, and the weight of building construction industry in the national economy has been increasing. But, the present state of the construction industry fails in meeting domestic

and international quality standards and the performance demand expected from the sector (MoWUD Report, 2006).

And also it consumes huge amounts of resources so becoming much more complex and require a careful integrated process management tools and techniques (Omran, 2012).

Construction projects have problems with construction techniques and management as well as limitation of funds and time. The critical problems are inability to complete the projects on schedule, low quality work, less risk and cost overrun during their execution phase. But in Jimma City, a number of buildings are constructed some of them are on progress. However, most of these building projects do not perform as expected especially with respect to running the project with the sequential phases of construction of the project characteristics.

Therefore, in this research an attempt was made to identify the influence factors and effects of running two phases of the building construction project once paralleled in culture of construction projects in Ethiopia specifically in Jimma City.

1.2 Statement of the Problem

The construction industries are faces with different ongoing challenges. Construction projects are frequently failing to achieve their goals due to a number of problems that could be termed “managerial” and “organizational” imperfect project design, poor stakeholder management, delays between project identification and start-up, delays during project implementation, cost overruns, coordination failure, etc. (Ika, Diallo, & & Thuillie, 2012).

Construction work environment is generally more hazardous than most other work environments due to the use of heavy equipment, dangerous tools, hazardous materials, its structural and organizational challenges for risk management and rapidly changing workplace and work conditions (Adane, Gelaye, Beyera, & Sharma, 2013).

Construction projects have problems with construction techniques and management as well as limitation of funds and time. These days, there is increasing trends, not only in terms of volumes of work done, but also in terms of the complexity of construction projects. The critical problems are inability to complete the projects on schedule, high quality of work, less risk and budgeted cost during their execution phase. By understanding the behaviors of construction industry of in Ethiopia, investigation of the influencing factors and their effects of running construction phase and operation phase of building construction projects once parallel is very essential. In Jimma city, a number

of buildings are constructed and some of them are on progress. However, most of these building projects do not perform as expected especially with respect to running the project with the sequential phases of construction of the project characteristics. Using building under construction have high effect on project cost, time & quality of construction, impact on the safety of workers and end users of the working environments. In order to minimize the degree of the risk building construction projects it is necessary to identify the influencing factors and their effects of using buildings under-construction.

The researcher is inspired to assess the influencing factors and their effects of running two phases (construction phase and operation phase) of building construction projects and to provide practical suggestions and recommendations aiming to upgrade the knowledge in order to improve the culture of construction projects in Jimma City with respect to special considerations undertaken in the future projects.

1.3 Research Questions

1. What are the influencing factors of using buildings under construction in Jimma City?
2. What are the social effects of using buildings under construction in Jimma City?
3. What are the economic effects of using buildings under construction in Jimma City?

1.4 Objective of The Study

1.4.1 General Objective

The main objective of this study was to assess the influencing factors and effect of using buildings under constructions in Jimma City.

1.4.2 Specific Objective

- ✓ To identify the influencing factors of using buildings under construction in Jimma City.
- ✓ To identify the social effects of using buildings under construction in Jimma City.
- ✓ To determine the economic effects of using buildings under construction in Jimma City.

1.5 Significance of the Study

In the end, the study findings are expected the following benefiters;

- ☞ To help the stakeholders to work on their weakness to improve the system of construction undertake to the required level so that of running the project with the targeted objective.
- ☞ Enable the regulatory bodies to practice rule and regulation of construction system and to set detail legal frame work.
- ☞ To give awareness for owner and contractor about the loses of expected benefits; due to using building under construction in order to use of their own knowledge and experience as well as international best practices to mitigate it.

1.6 Scope and Limitation of the Study

The study was limited to the building construction project in Ethiopia Oromia Region, at Jimma City. The scope of the study was target on the assess the influencing factor and effect of using buildings under construction due to time, cost and available data resource limitations.

CHAPTER 2

LITERATURE REVIEW

2.1 General Theoretical reviews

According to a world Bank report the construction industry is an important sector of the economy and has multiple backward and forward linkages with other sectors. The industry contributes significantly to socio-economic development and employment (WBR, 2007).

Construction industry development is a deliberate process to improve the capacity and effectiveness of the construction industry in order to meet the demand for building and civil engineering products, and to support sustained national economic and social development objectives (CIB, 1999). It was also agreed that construction industry development promotes: (a) increased value for money to industry clients as well as environmental responsibility in the delivery process; and (b) the viability and competitiveness of domestic construction enterprises.

The construction sector is responsible for building new houses, apartments, factories, offices and schools. It also builds roads, bridges, ports, railroads, sewers and tunnels, among many other things. In addition, it maintains and repairs all of those structures and produces the basic materials such as concrete that are used to make them. The industry's significance is due not only to the fact that it provides the buildings and infrastructure on which virtually every other sector depends, but to the fact that it is such a sizeable sector in its own right. The construction industry is Europe's largest industrial employer, accounting for about seven percent of total employment, and in the EU, the US and Japan combined, it employs more than 40 million people. Among all OECD countries, the construction industry accounts for an average of 6.47 percent of GDP (OECD, 2008).

Construction is an industry that has a great impact on the economy of all countries. Almost, it is very difficult to think of any development activity that does not involve construction. All infrastructure facilities needed for development such as road, telecom, electricity, power projects, and socioeconomic facilities such as school, hospitals, factories etc.; and the very neighborhood we live in are all products of the construction industry (Abadir, 2011).

The construction industry faces ongoing challenges. From an external perspective, economic uncertainty, increased competition within the industry and the growing influence of regulatory agencies drive profit margins down. From an internal viewpoint, the increase in the numbers of features in a project's scope, against shorter construction deadlines and restricted budgets raise the complexity of building construction projects. Additionally, building construction often occupies the bottom of industrial productivity rank reports worldwide (Levy, 2012) even showing negative productivity rates. The construction sector relies on management practices based on intuition, experience and poor risk management. These practices often preclude the appropriate level of ability to handle the uncertainty and complexity (McCray & Purvis, 2002) involved in construction projects, resulting in project failures in terms of finishing projects within deadlines and budgets (Mills, 2001). As a common practice, the building construction industry utilizes ordinary project management practices and frameworks. Practices are limited to assessing the consequences of deviations from the project plan rather than dealing with the causes of delays, cost overrun quality compromise in the production system (Coble, 1999).

In practice, however, some construction projects encounter major success and/or efficacy factors variation, delay on completion time or poor workmanship upon completion this results the construction projects were lead to unfinished (Hussin, 2011).

2.2 Construction industry in Ethiopia

In developing countries, the construction industry is a key barometer of economic performance. The construction industry contributes a significant percentage of the gross domestic product (GDP) of the countries and provides employment to a substantial proportion of the working population (Salleh, 2009).

According to (Jekale W. , 2005) in Ethiopia the construction industry has been in the process of transformation, which is based on improving the competitiveness of the construction industry and enhancing its ability to fulfill the national development demands.

In the case of Ethiopia, although the definition adopted by the National Accounts Department of MoFED is similar to that of ISIC, the activities actually covered under the industry are the construction and maintenance of: Residential buildings of urban and rural areas, Non-residential buildings, i.e. factory buildings, ware houses, office buildings, garages, hotels, schools, hospitals, clinics etc. and construction works like

roads, dams, athletic fields, electricity transmission lines, telephone and telegraph lines, telephone and telegraph lines etc.. (Getaneh, 2011).

The construction industry has important contributions to the Ethiopian economy, as demonstrated by its share in the GDP. For instance, the share of the sector in the total GDP averaged at about 5.2 percent in the period 2002/03- 2006/07. The sector has registered relatively higher growth as compared to the growth of GDP during this period. Over this period, there has been increased investment on the development and expansion of various infrastructure projects like roads, airports and residential and non-residential housing units (EEA, 2008).

The Construction industry in Jimma, there is an activities and crucial segment in economic development of the town, as in other parts of Ethiopia, world (Eden, 2016).

2.3 Definitions

2.3.1 Construction phases (stages)

Several elements found in characteristics of construction projects to the characteristics of a dynamic system. The interconnectivity is explicit between project stages, in the event that subsequent phases rely on the accomplishment and performance of previous ones. This dependent connection remains valid for divided *n*-sub-stages or *n*-activities and also applies to the proposed framework. The dependence of processes and/or activities is well documented in the literature and well known by practitioners. An activity or stage may impair or favour a successive action depending on the level of correlation and dependence.

A typical building construction process runs through three main consecutive phases: design, construction and operation. Currently, architects and engineers both engage in the creation of environmental designs that adequately reflect high performance through sustainability and energy efficiency in new buildings. Occupants of buildings have also recently demonstrated a dramatic increase in awareness regarding building operation, energy usage, and indoor air quality. The process of building construction is chronologically located between both the design and the operation phases. However, this phase has not yet been addressed in either understanding contractor behavior or developing innovative sustainable techniques. These two vital aspects have the potential to levy a dramatic impact on enhancing building performance and operational costs. (Kristen & Parrish, 2016)

2.3.2 Building Construction

A building is an assemblage that is firmly attached to the ground and that provides total or nearly total shelter for machines, processing equipment, performance of human activities, storage of human possessions, or any combination of these (Modular Institute Building, 2010).

The Building Construction also called "vertical construction" and its category sub divided into public and private, residential and non-residential building construction.

2.3.3 Unfinished building construction

An unfinished building is a building (or other architectural structure, as a bridge, a road or a tower) where construction work was abandoned or on-hold at some stage or only exists as a design. It may also refer to buildings that are currently being built, particularly those that have been delayed or at which construction work progresses exceptionally slowly.

Many constructions or engineering projects have remained unfinished at various stages of development. The work may be finished as a blueprint or white print and never be realized, or be abandoned during construction. A project may be discontinued at any stage of the life cycle and incur a significant amount of loss, and there has been no substantial activity on the site for six consecutive months (Hoe, 2013)

2.3.4 Success and/or efficient building construction project

Project success is the results surplus expected or normally observed in terms of cost, schedule, quality, safety, and participant satisfaction having everything turn out as hoped anticipating all project requirements and have sufficient resources to meet needs in a timely manner (Sanvido V, Grobler F, & K Parfitt, 1992).

Success in building construction projects is hazardous matter and might have numerous limitations (factors of failure) and drivers which can lead to successful delivery of a project (factors of success) at the same time.

2.4 Nature of building construction

2.4.1 Nature of building under construction

Two main aspects of construction are of particular interest and in need of better definition: one relates to an understanding of the systemic nature of building construction as an 'industry' and the other to its 'complexity' (Jose L Fernandez Solis, 2008).

2.4.2 Nature of unfinished or abandoned building construction

There are several stages before a project is declared abandoned. If it has passed its promised delivery date by 10%, it is considered late; if the delay stretches beyond 10%-30%, then it is considered ‘sick'; and finally, if no work has been carried out, or no workers are on the project site for up to six months, then it is deemed abandoned (Star, 2009a)

2.4.3 Nature of successful or efficient building construction

From the organization perspective for a project to be successful (Kerzner, 2001) cited on (Mamaru, Esayas, & Sintayehu, 2016) suggested three criteria’s: The first is that it must be completed with minimum or mutually agreed upon scope changes, even though stakeholders constantly have different views about projects’ results. Second without disturbing the main work flow of the organization because a project has to assist organization’s everyday operations and try to make them more efficient and effective. Finally, it should be completed without changing the corporate culture even though projects are "almost exclusively concerned with change with knocking down the old and building up the new.

Success criteria or a person's definition of success as it relates to a building often changes from project to project depending on participants, scope of services, project size, sophistication of the owner related to the design of facilities, technological implications, and a variety of other factors.

The method of building construction effectively is construction of the building efficiently. Construction efficiency may be determined by solving a number of problems and applying decision methods. First, the most efficient site for new construction should be selected and the efficiency of the site for the buildings to be repaired should be determined. Then the investment projects have to be analyzed by multi-criteria methods. According to the project selected, a building is designed on the basis of the effective architectural and constructional decisions made (Leonas, 2004) sited on (Lemlem, 2016).

Success is a comparative term and broadly speaking execution of a project should achieve success in following areas (Mamaru, Esayas, & Sintayehu, 2016).

***a) Project objectives*:** Time, cost, scope, and quality, conformance of design and specifications of project as defined in its contract.

***b) Organizational objectives*:** Cost effectiveness, low cost of poor quality improvement in productivity, profitability, customer satisfaction and company image.

***c) Social and environmental objectives*:** No loss or disturbance to public life and property, execution of work without disturbing environment, wild life, fauna and flora. This aspect is generally covered in contracts of projects in public sector (Pakistan Engineering Council contract documents).

***d) National objectives*:** The implied objectives include jobs creation, poverty alleviation, skill development, development and use of national resources, support to local construction material industry, paying taxes etc. It is also called "Corporate Social Responsibility" (CSR), which is a moral obligation and not covered in contracts.

On common threads relating to success and/or efficiency criteria of the project are often develop not only with an individual building project but across the construction industry as we relate success to the perceptions and expectations of the major stakeholders.

2.5 Contractual provision related to running two phases parallel

There is No specific law governs using building under construction in detail so that, it has to be included under the general provision, i.e. Ethiopian building proclamation No.624/2009 to overcome the using of building under construction and abandonment of building construction that results from financial, social and political bankruptcies the country like Ethiopia. The applicability of the building proclamation No.624/2009 is in question mark. The following articles and their sub articles are the main gaps related the problems arise in the current building construction projects in Ethiopia basically having no detail information to responsibility of building officer, criteria of occupancy permit, Precautionary Measures During Construction, Site Operations are difficult to trace, who is accountability and the transparency of regulatory bodies to their society so these leads to decline the contribution of the building construction to the economy of the country (Ethiopian building proclamation No.624, 2009).

2.5.1 Article 11 Building Officers

Sub-Article -1: Every urban administration or designated organ shall appoint a building officer, with the required educational and professional qualifications to enforce, on its behalf, the provisions of this Proclamation and other laws.

Sub-Article-3: A building officer shall inspect all buildings under the territorial jurisdiction of the urban administration or designated organ to ascertain conformity with this Proclamation and other laws.

Sub-Article-5: A building officer is empowered to order inspection of exempted buildings erected before the effective date of this Proclamation and to order the demolition or rectification of such buildings if public safety is at risk.

Sub-Article-7: Without prejudice to his criminal liability, the building officer shall bear civil liability for any damage he causes to third parties in the course of implementing this Proclamation and the regulation and directives issued there under as a result of his own fault.

Sub-Article-7: Without prejudice to the provision of sub article (1), the city administration or the designated body shall make good the damage incurred by third parties where such act of the building officer is regarded as a professional fault. In such cases, the city administration or the designated body shall have the right to reimburse from the building officer to the extent it has paid to third parties.

2.5.2 Article 18: Occupancy Permit

Sub-Article-1: A newly constructed category "C" building shall not be put to use before it has been inspected for compliance with this Proclamation and a certificate of occupancy has been issued.

Sub-Article-2: A building officer may provide occupancy permit for partially completed building provided safety is ensured.

Sub-Article-4: A building officer may take legal measures on any person occupying a category "C" building without a valid occupancy certificate (Ethiopian building proclamation No.624, 2009)

2.5.3 Article 31: Precautionary Measures During Construction

Sub-Article-1: any building shall be designed and constructed in such a way that it shall not impair the safety of people moving around, other constructions and properties;

2.5.4 Article 32: Site Operations

Sub-Article-1: In cases where danger or serious inconvenience to the public may ensue from the erection or demolition of a building on any site, the urban administration or designated organ may require that the owner of the site, before such is commenced, shall do all the necessary preventive works (Ethiopian building proclamation No.624, 2009).

2.6 Influencing factors of using building under construction

The factors influencing running two phases of building construction parallel (using building under construction) are fluctuating according to and due to the faults and weakness of the client, the contractor, the consultant and the pressure of end users. Therefore, it is essential to identify the actual factors influencing to use building under construction in order to minimize and avoid failures and/or their adversely effects in any construction project.

The owner wants the project completed on time and on budget, and the designer and contractor both expect to meet certain profit or fee goals. All three viewpoints also recognize the absence of any legal claims or proceedings on a project as a desirable outcome. It is also evident that there are some unique factors associated with each of the three groups. The designer for instance is looking for a project that will increase the level of professional development and professional satisfaction among his employees. While Safety is a high-priority issue for the contractor that would not normally be an issue with the other two groups, because their employees are at much less risk during the design or operation of a building than the contractor's workers is during the construction of a building (Babu, et al.,, 2015).

One-month delay might be a disaster in building a function center, which is supposed to be undertaken before its opening day. Because the project implementation process is complex so it usually involves attention to a broad variety of human, budgetary, and technical variables. From project management perspective, major success factors (MSFs) are characteristics, conditions, or variables that can have a significant impact on the success of the project when properly sustained, maintained, or managed. There is a very close link between the type and scope of projects and respective Major Success Factors (MSF) (Babu, et al.,, 2015).

By its nature, construction is a risky business. Current project management practices of organizations in the construction industry sector do not always ensure project efficiency and/or project success. Successful/efficient construction project greatly depends on how the project has been managed and controlled. The main problem with projects management practices have always been mentioned as planning, project implementation, cost and time overruns and quality non-achievement. The major success factors (MSFs) are more useful in decision-making support; more player-based research studies should be conducted. Architectural, Engineering and Construction

(AEC) firms are main players in the design and construction stages of building projects, and their decisions can significantly affect performance of building projects. To date, there is no comprehensive study that explores the specific one detail of major success/efficiency factors from the perspective of project management practitioners. Thus, comprehensive studies on this problem are necessary.

Adnane Belout and Clothilde Gauvereau (Belout & Gauvereau, 2003) considered the following four dimensions as the success factors and (Pakseresht & Asgari, 2012): cited on (Mamaru, Esayas, & Sintayehu, 2016)

1. Project Result
2. Customers effects
3. Commercial success and conduction and preparation for the future
4. Identifying the beneficiary groups (stockholders, managers, customers and personnel) which are significant as well as major success factors until different people wants to see success in different ways.

According to (Mamaru, Esayas, & Sintayehu, 2016) the highest significant major success factors are; Leadership skills of project manager; project clear objective, adequacy of funding, decision making effectiveness and project monitoring success factors.

In order to investigate influencing factors, this study was performed with questionnaires and interviews were prepared and the questioners distributed among the selected projects with respect to Time related factors, cost related factors, material related factors, risk related factors, regulatory bodies related factors, and end users related factors of using building under construction or running two phases of building construction parallel.

2.7 Effects of using building under construction

The interdependence of building construction phases or stage are sure sequenced events while the interdependence of detail activities forms a conduit to the propagation of unsure events. Potential risks captured through the entire project life may impact project execution whenever not properly treated, resulting in project deviations. The sequence of events is represented in the system by the flow of uncertainty to risk and the occurrence of risk events, through risk management filtering actions avoidance, acceptance, sharing, transference, mitigation, motivation and, finally, to variability. This flow resembles an intrinsic characteristic of systems in the presence of disturbance

or noise. Control systems may transmit unfiltered noise across connections affecting vulnerable components and causing disturbances or unpredicted behavior. Although the level of influence in this flow of sequential, parallel or overlapping relationships in the process or activity network have not been investigated at this point, understanding how risk transforms into variability, and especially how variability affects networked activities, propitiates an opportunity to develop methods aimed at avoiding and mitigating (filtering) the propagation of risk (noise). Regarding risk materialization in variability, different outcomes build on how concentrated or distributed the risk impact was (Ricardo Antunes and Vicente Gonzalez , 2015).

2.7.1 Social Effects

Literatures found that in Ethiopia there is only one comprehensive labour law that is Ministry of Labour and Social Affairs (MOLSA) the Federal Governmental Agency who's operating in order to address all aspects of ensuring labour relation to be governed with basic fundamental rights and obligation focusing on industrial peace in all work places. The establishment of the services has the objective of preventing injuries, diseases, creating of harmonious and peaceful industrial relations where there are no strikes and industrial unrest.

Since construction is more hazardous areas than others, so accidents occur in every construction project and the magnitude of these accident varies considerably from project to project. Some horizontal construction projects are fewer numbers of hazards occur than others vertical construction projects. So, it is essential to define the actual causes of hazards on building construction project in order to minimize and avoid the accident on building construction project. There is a wide range of views for the causes of hazards for engineering and construction projects. Some are attributable to a single party; others can be qualified to several quarters and many relate more to systemic faults or deficiencies rather than to group or groups.

According to (Manaye, 2017) Falling from height, foot and hand injuries, manual handling, bending and twisting and falling objects observed to be most critical hazards on building construction project. However, Government and contractors take place to be the main responsible for accidents on construction sites and daily labors are the major victims of construction sites accidents.

According to (Hadi, 2001) the common impacts experienced during construction were:

- Noise from machinery, increased traffic etc.
- Dust particularly from demolition activity, sandblasting.

- Dirt and mud from the site affecting streets, pavements homes and shops.
- Parking disruption by workmen, site vehicles, and site visitors.
- Increased traffic and congestion caused by deliveries, site traffic, and workmen's vehicles.
- Restriction of access to homes, shops and streets.
- Safety risks from holes in pavements, difficult road crossings, and falling materials.
- Health impacts from dust and pollution as well as psychological effects such as stress.
- Poor behaviour of workmen in terms of lack of consideration and rudeness.

A. Impacts on Air Quality: During the construction phase, the movement flow volume was undoubtedly increase resulting in local air pollution mainly due to dust and noise. The main sources of air and noise pollution was being clearing wastes and earthmoving activities, concrete production on site, loading and unloading of materials, and operation of construction equipment. These may cause nuisance to local residents and business activities mainly in the Cities and villages along the road. The prevalence of high machinery-oriented project and less construction safety system especially may aggravate the problem. (Westland's Skye Development, 2015).

B. Noise pollution is an environmental problem in cities. Although recent field research has focused on transportation noises, the effects of exposure to building construction noise have not been studied. In a quasi-experiment, residents of a three-wing residence hall for female students located near a construction site served as subjects in three comparison groups. Information about their personal characteristics and perceived effects of construction noise on studying and other behaviors and also sound level measurements and records of resident turnover and systematic observations of windows open or closed were analyzed. As expected, the results of chi-square tests, one-way ANOVAs and MANOVAs show significant wing effects (p50.05) on frequency heard, distractibility, and several perceived behavioral effects, such as being awakened, difficulty with relaxation and studying-related activities, and interference with conversation and television-watching. These effects were significantly more severe for residents closest to the construction site than those further away. Residents coped with noise by speaking louder,

keeping windows closed, and leaving the room (Westland's Skye Development, 2015).

C. Effects on Academic Performance

According to the arousal theory (Broadbent, 1971, 1979), exposure to moderate or high intensity noise causes an increase in arousal. Heightened arousal leads to a narrowing of an individual's attention. As a result, inputs that are irrelevant to task performance will be ignored first. As arousal increases, attention is further restricted; task-relevant cues may be ignored as well. The relationship between arousal level and task performance is represented as an inverted U-shaped function, known as the Yerkes-Dodson Law. Performance is greatest at a moderate arousal level and gradually tapers o¡ as the arousal level either increases or decreases. Further, the effects of arousal on performance vary with task complexity. The optimal arousal level is lower for complex task than for simple ones.

According to Ward and Suedfeld (1973); the simulated traffic noise has effects on studying and learning process and observed that less student participation and attention under simulated traffic noise broadcast outside a university classroom building. Their findings suggest that college students would have greater difficulty concentrating and studying in a noisy room than in a quiet room. In addition to noise and interference with watching television, building vibration is another effect of the construction works. Again, a significantly higher percentage of feeling building vibration and higher percentage smoke or dust both are another effect.

In conclusion, the results of this study suggest some negative impact of building construction noise on residents' home life. Being distracted, having difficulty with relaxing and, in particular, being woken up by construction noise can affect the mental health of residents. Having to leave the residence or to keep the window closed, would mean one's home is no longer one's haven. University administration contemplating constructing new buildings near occupied dormitories should, therefore, take every possible measure to minimize the effects on student residents (Cheuk, 2000).

Although most of the projects were not fully complete, local people felt able to express their concerns about the impact they felt that the projects were already having on their communities, both positive and negative, and to make judgements as to future effects. There was a fairly even split between positive and negative views. In general, the development itself was welcomed as an improvement to the area but there were some details that caused concern. Opinions also differed, depending on an individual's

circumstance, e.g. a development could increase trade for some businesses but reduce it for others (Hadi, 2001).

Therefor; the successful execution of construction project and keeping the site work environment safe and health. In Ethiopian context the problem of construction health and safety are all most neglected and they are thinking it's irrelevant for all party. This indicates that this problem didn't receive enough attention by both researchers and responsible authorities. Even if few researches are made in health and safety in Ethiopia, this thesis is also assessing the social effects of using building under construction project in case of Jimma city.

2.7.2 Economic Effects

There is a wide variation in economic structures, occupational structures, working conditions, work environment, and the health status of workers in different regions of the world, in different countries and in different sectors of the economy. Therefore, the mechanization of the construction industry is not uniform throughout the world. However, as stated earlier, the construction industry plays a vital role in enhancing the economy of any country, especially in developing country. It provides the infrastructure required for other sectors of the economy to flourish.

Many studies, such as (Coble, 1999) have shown that construction industry reflects the level of economic development within the country. The construction sector everywhere faces problems and challenges. However, in developing countries, these difficulties and challenges are present alongside a general level of socio-economic stress and a lower productivity rate when compared to developed countries (Ofori, Globalization and construction industry development: research opportunities, 2000) On the other hand; it is generally believed that the construction industry is a good source of employment at various levels of skills, from a general labor to professional workforce. Other major areas that impact on this sector are lack of research and development, lack of trade and safety training, customer's dissatisfaction, and the continuously increasing construction costs all of which result in less profitability (Coble, 1999).

The country's huge infrastructure expansion and urban centers' remarkable building construction activities provided an opportunity for taking up the issue for further analysis.

Similar to all other socio-economic activities, another key contribution of the construction industry is revenue generation to government. The construction industry contributes to economic activity through generation of revenue for government from corporate income taxes of companies, the rental income, sales tax, capital gain tax and employees' income tax from those employed in the construction industry, which in turn goes to the financing of public services such as schools and health institutions among others.

In order to identify and estimate the total economic contribution of the construction industry to an economy, one has to look beyond the direct expenditures made by the industry itself, since there is a ripple effect of the expenditures made for goods and services supplied to the industry. Likewise, business revenues generated from supplying of goods and services to the construction industry are paid out in wages, and material costs, which in turn are spent on living costs. This multiplier effect enlarges the economic impact of the initial construction industry expenditures. In other words, the initial wave of spending generates a second and third wave of spending as wages paid and profits made on the direct construction spending spins through the economy in several cycles. Thus, the original direct expenditure yields a greater economic impact than just initially spent. (EEA, 2008)

The role of the construction industry in terms of creating employment opportunities especially in urban areas is becoming visible. According to the 1999 Labour Force Survey (LFS), of the total employed persons in the country which was estimated at around 25 million, 0.9 percent was estimated to be in the construction industry. The contribution of the industry in terms of creating employment has slightly improved over the years. For instance, according to the 2005 LFS, of the total employed population in the country (31.4 million), 1.4 percent was estimated to be in the construction industry. The construction industry also contributes to the generation of revenue for the government. The rental income tax is one of the major revenue sources within the construction industry to the government. The rental income tax which was Birr 15.2 million in 1997/98 has increased to Birr 78.3 million in 2004/05 but lowered to Birr 32 million in 2005/06 generating nearly half a percentage point of the total government revenue in the period 1997/98- 2005/06. Though there are many other direct and indirect revenues that are generated from the construction industry, the paucity of data has limited this report to indicate the total revenue that is generated (EEA, 2008).

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Study Area

The subject of this study was conducted in Jimma Zone, Oromia Regional State, and South West Ethiopia at distance 346 Km from Addis Ababa. Its astronomical location was 7°40′N North Latitude and 36°50 East Longitude and elevation varies from 1,780 m-2000 m above sea level. Ground water level in the area was variable which ranges from 3- 7 m. (https://www.mudco.gov.et, 2008)

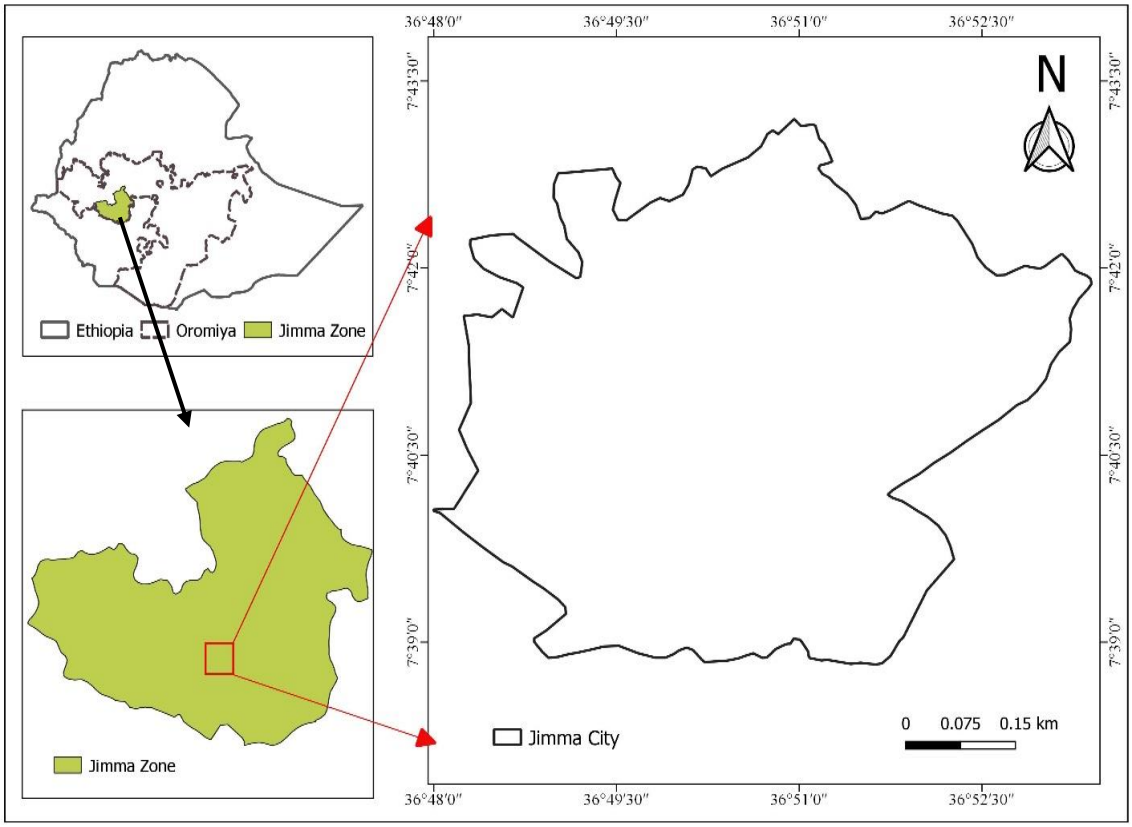


Figure 3. 1: Map of Oromia Regional State (Jimma City) (Source: GIS, 2019)

3.2 Study Period

The research was conducted as plan to generate data starting from June, 2019 and was ends on January, 2020.

3.3 Study Design

The study was designed in a way that reflects a response for the inquiry and objectives. Primarily, problem was identified from review and assessment of collective

information on infrastructure development program. Question was raised for investigation and objective was set forth to conduct the research.

This research explains the influencing factors and effects of using buildings under construction on the participant involved in building construction project around Jimma to generate numerical and to provide explanatory research method from the literature review and data collected through questionnaires distributed and interview about the projects. An explanatory research survey involves asking question (in the form of questionnaire) of large group of individuals either by mail, phone or in person. It was more advantages in providing a lot of information from large number of individuals and it was an efficient approach of collecting explanatory data regarding characteristics of a population, current practices, conditions or needs. Thus explanatory survey was designed to undertake the investigation for this research and the plan of this studies was shown in figure 3.2.

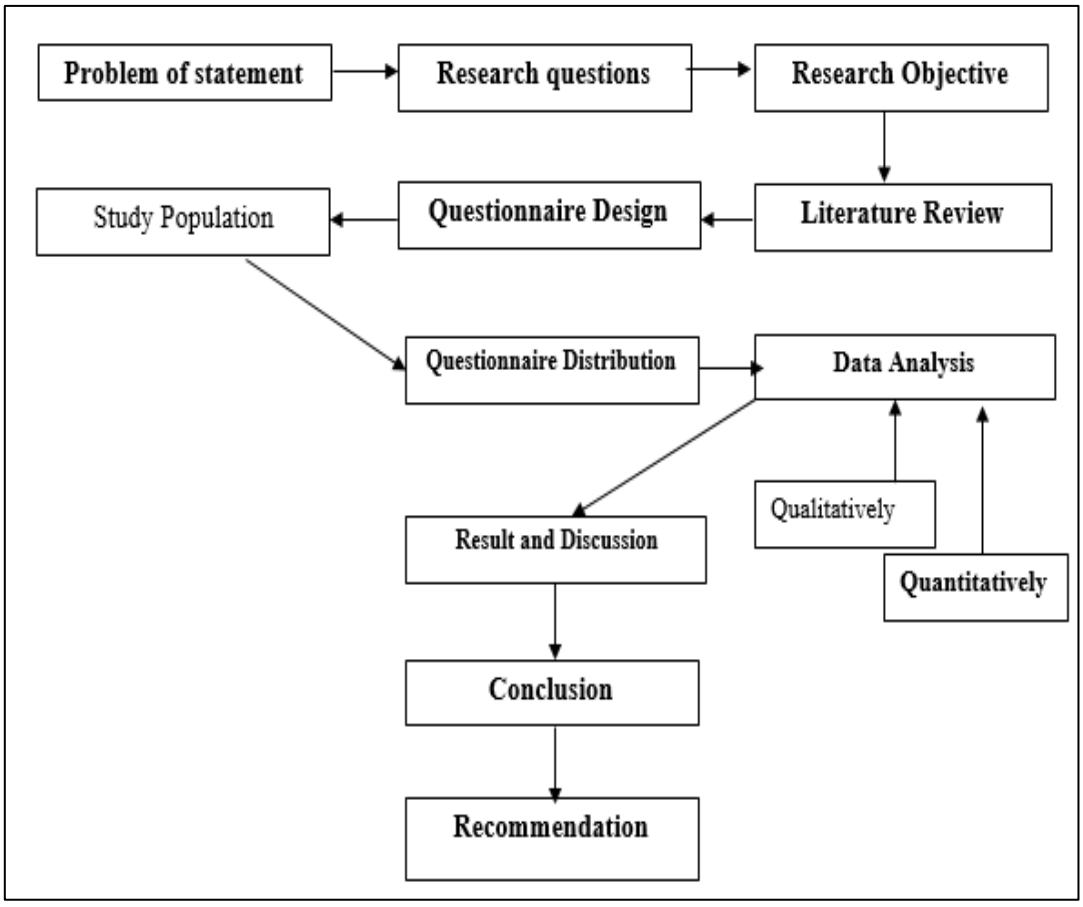


Figure 3. 2 Research design framework

3.4. Study Variables

3.4.1 Independent Variable

Independent Variable of the study are**:**

- ✓ Cost under estimation
- ✓ Financial difficulties by client
- ✓ Lack stakeholders experience
- ✓ Inappropriate government policies
- ✓ Unfavorable contract clauses/agreement

3.4.2 Dependent Variable

Dependent Variable of the study are:

- ✓ Influencing factors
- ✓ Effect of using building under construction

3.5 Population

The Study populations consist of different buildings under construction mainly the building projects which are open to service in Jimma City.

The researcher covers that all population of the study which are building under construction projects and open to the service in Jimma city so no need of sample size determination.

3.6 Data Collection Process

The source of data was used for conducting this research includes both primary and secondary sources. The primary data for this research are provided by questionnaires and interview. The secondary data are collected from reviewing related literatures includes books, dissertations, document reviews and journals of various authors.

Both primary and secondary data was used in this study. The secondary data was collected from the previous studies done in this particular study. The primary data was collected from the total population of the study by questioner and interview type.

The target groups in this study were main stakeholders and end users of in building construction projects in Oromia region, Jimma Zone, Jimma City. A total of 30 building under construction projects were consider in this research. Since the size is less than 30, there is no need to determine sample size.

The study target distributed questionnaires are 89 in data collection with regard to influencing factors and effects of using building under construction projects in Jimma city from perspective of client, contractor and regulatory bodies. The questionnaire that

was filled by the respondent are 69 and the remaining 11 questionnaires was not filled by the respondent due to inconvenience of the respondent.

According to the researcher perception, it is culture to construction groups spend most of their time at construction sites, they are exposed to a higher probability of injury or death so the first offended in most studies are those who are working on the site but the question is what about the organization and the public who uses the service of the building which is under-construction. As indicated in the research methods interviews were focused on end users of the building who are working on building that is under-construction project. The 35 interviewees were asked and finally each of their answer were summarized as follows.

3.7 Data Processing and Analysis

A structured questionnaire survey approach was considered to study the influencing factors and effects of using building under construction projects in Oromia region, Jimma zone, Jimma city.

The respondents were required to give a scale rate for each factor depending on their experience in building construction projects regarding the influencing factors and effects of running two phases of the building at once.

After successful collection of data, the data was arranged according the context of the research and analysis of the data was done using both in terms of qualitative and quantitative analytical techniques. In order to single out the relevant information supplying questions and notes, main influencing factors and effects are to be executed. After sorting out the effective data, the numerical portion of the data was analyzed using Excel software and other tools, but the word portion was digested from all the interview notes and questions from the questionnaires.

explanatory statistics was used in this study. The explanatory data analysis involved frequency, tables, percentage and relative importance index. The relative importance index method (RII) was used to determine the Contractors, Clients, end users and regulatory bodies perceptions of the relative importance of the identified key influencing factors and effects of using building under construction.

In this research, ordinal scales were used. Ordinal scale as shown in table 3.1 is a ranking or a rating data that normally uses integers in ascending order.

Table 3.1 Ordinal scale used for data measurement

Item	Very low Important	Low Important	Medium Important	High Important	Very high Important
Scale	1	2	3	4	5

The relative importance index can be computed by applying the relationship as shown below (Odeh & Battainehm, 2002).

$$RII = \sum \frac{W}{A \cdot N} \quad \text{..... (1)}$$

Where: W was the weight given to each factor by the respondents and ranges from 1 to 5, $A\ was$ the highest weight (= 5), and N was the total number of respondents.

The average index method (A.I) was used to determine clients', consultants' and contractors' perceptions of the relative importance of the identified performance factors. The average index $(A.I)$ was computed as

$$(A.I) = \sum \left(\frac{(1X1+2X2+3X3+4X4+5X5)}{N} \right) \quad \text{..... (2)}$$

Where N = Total number of respondents

X = Frequency of Likert scale important response

CHAPTER 4

RESULT AND DISCUSSION

4.1 Introduction

This chapter describes the results and discussion of questionnaire survey and interview concerning the influencing factors and effects of using building under construction project from client, contractors, consultant's and end user's view-points. It focuses on describing the respondent's characteristics in addition to the discussion of the influencing factors and their effects of using building under construction project in Jimma city.

4.2 Questionnaire response rate

The study target population are 89 in data collection with regard to influencing factors and effects of using building under construction projects in Jimma city from perspective of client, contractor and regulatory bodies. The questionnaire that was filled by the respondent are 69 and the remaining 11 questionnaires was not filled by the respondent due to inconvenience of the respondent.

Table 4.1: Percentage of retuned questionnaire

Questionnaire	Respondent			Frequency	Percentage
	Client	Contractor	Regulatory		
Distributed	26	29	25	80	100%
Responded	22	27	20	69	86%
Non response	4	2	5	11	14%

Form the Table 4.1 it can be concluded that 69 out of 80 target respondents filled in and returned the questionnaire which contributes 86%. This response rated was attributed to the data collection procedure, where the researcher engaged himself to administer and wait for respondent to fill in. The questionnaire that were not returned were due to respondent not being available to fill them in time after persistence follow-ups. The response rate demonstrated the willingness of the respondent to participate in the study.

4.3 Demographic Characteristics of Respondents

The demographic information was an introduction to the respondents which could give the summarized information about types of organizations, category, and class of company, designation or position of respondent in the company, field of specialization

of the respondents, relevant work experience, and number of projects that the respondents are involved which have highly risky to operate two phases at once are indicated in the questionnaires as part one, calling general information, which is tabulated in the following figure 4.1.

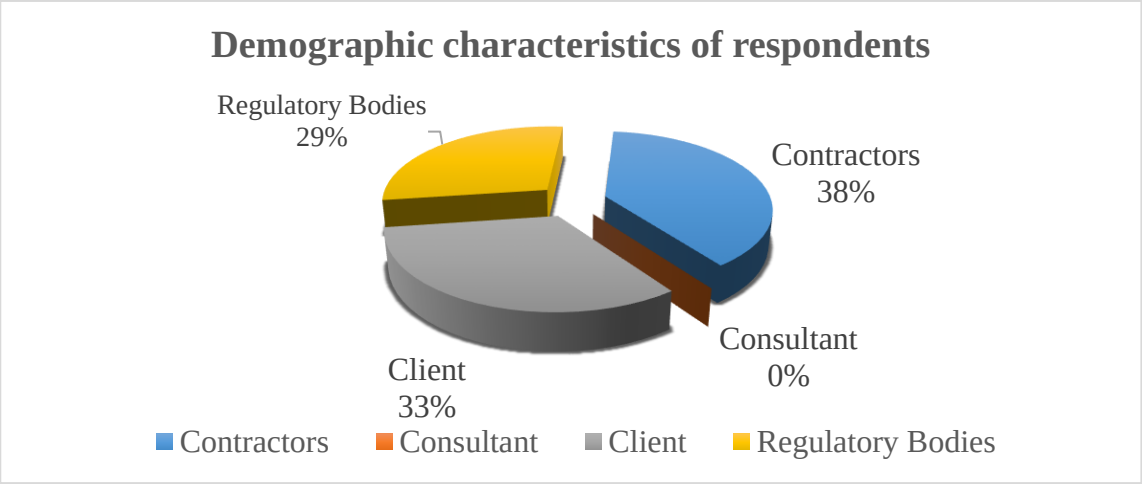


Figure 4.1: Demographic characteristics of respondents

4.3.1 General Information for Contractor respondents

A. Category and Class of Contractors

The classification of contractors registered as general contractor and building contractors involved in Jima city building construction projects. From the total respondents participated in the survey study that grade-8 contractors are higher in number than other grade of contractors. Thus, most of the respondent able to respond to the questionnaire in the manner intended. The respondent Category and Class of Contractors is presented in figure 4.2 below.

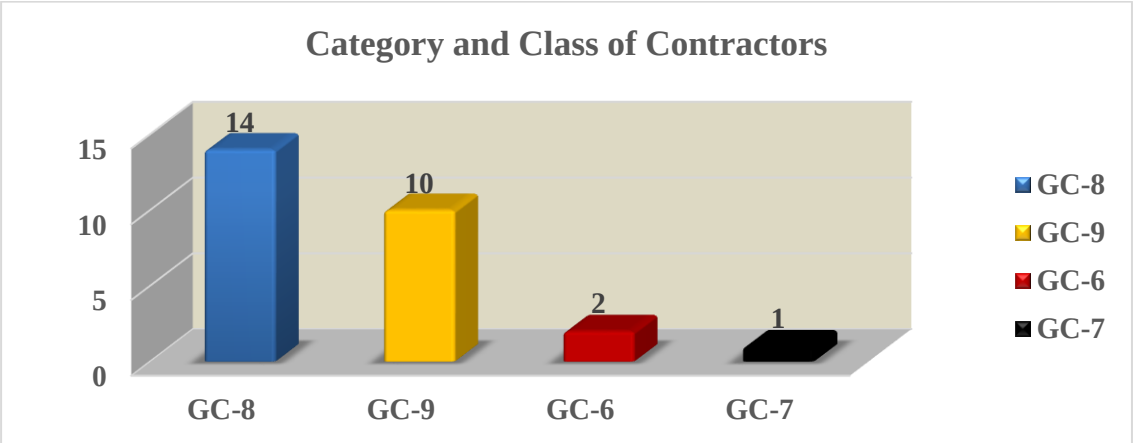


Figure 4.2: Contractor of Category and Class

B. **Respondent designation (position) in the company**

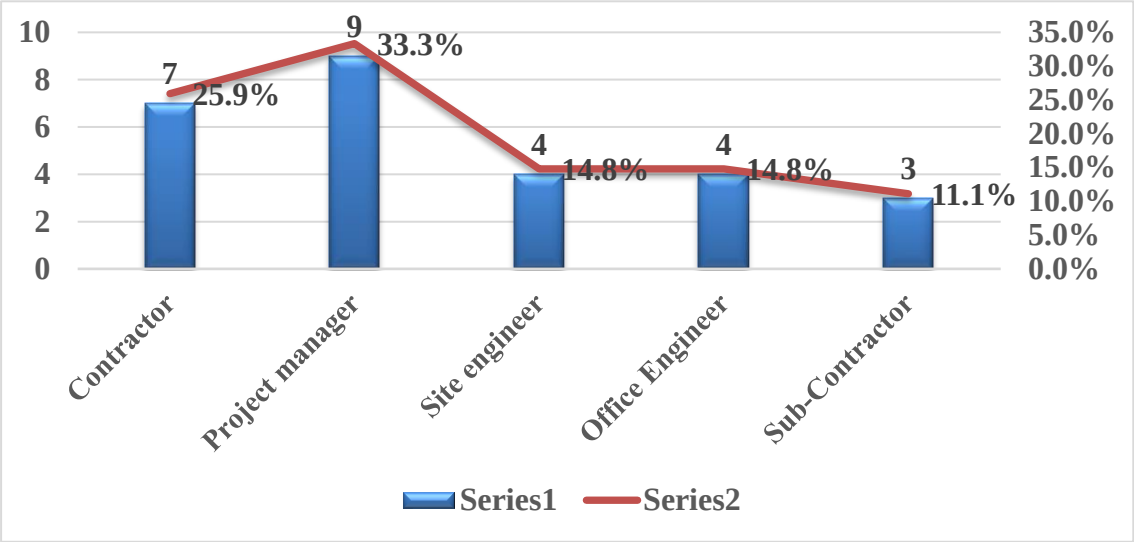


Figure 4.3: Position of respondents

Figure 4.3 shows position of respondents form the contractor's side that participated in the survey study in Jima city building construction project. From the total 27 participants, most of the respondents in this study were project manager. Thus, all respondents are the responsible body about the construction practice in their project than any other person. Therefore, they are expected to give reliable information for the specific project they work.

C. **Respondents field of specialization**

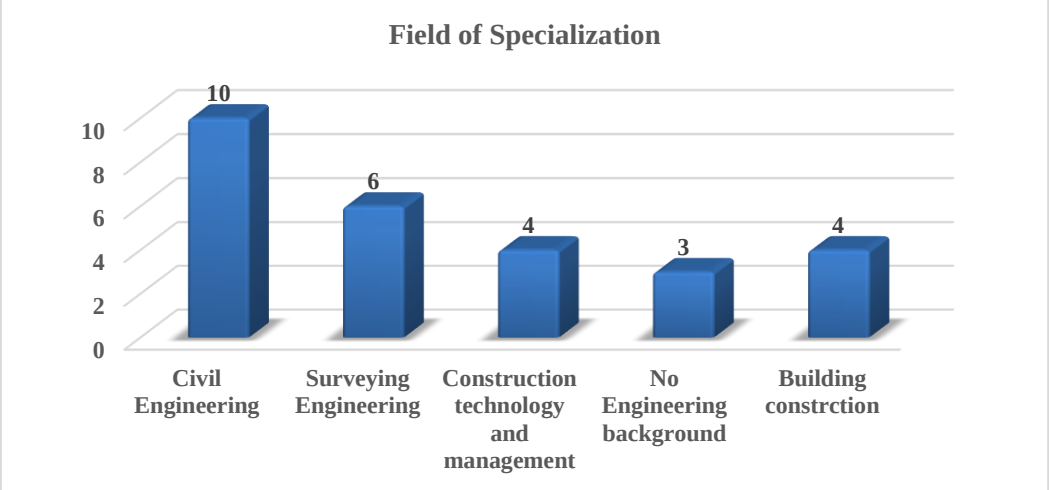


Figure 4.4: Field of specialization

The study was also considered as shoeing in figure 4.4 the qualification and experience on the questionnaire to determine level of qualification that the respondent held. From the returned questionnaire, most of the educational qualification of the respondent are

engineering background with respect to main stakeholders of the project and others were less non-Engineering but have high experience in the construction project. Therefore, they are expected to give reliable information for the specific project they work.

D. Working experience of contractor in the building construction sector

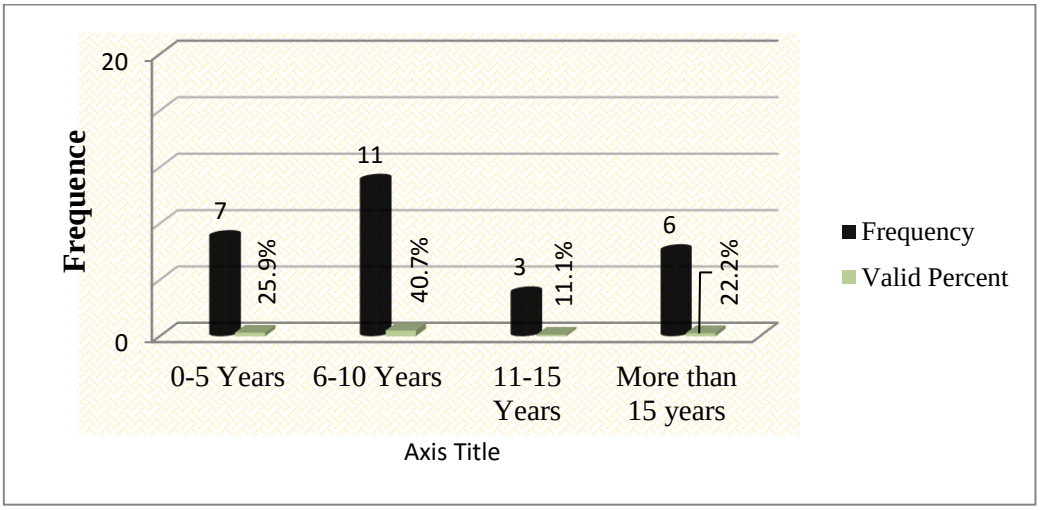


Figure 4.5: Experience of respondent

Figure 4.5 shows the result obtained from survey results of experience of respondents of contractor who were participated in Jima Zone public building construction projects for the last five years and currently under construction. The result obtained from the survey indicates that the respondents with an experience between 6-10 years were maximum. This implies that their experience is sufficient to find out relative importance index of influencing factors and effects of using building under construction projects.

***E*. Number of building projects implemented two phases once**

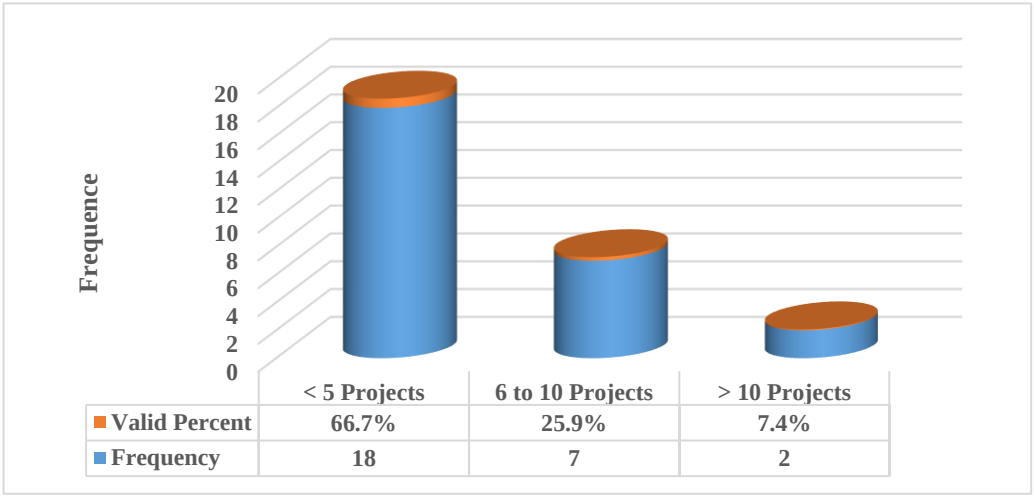


Figure 4.6: Number of projects implement two phase ones

Figure 4.6 shows the survey result obtained from participant's contractors who were involved in Jima Zone public building construction projects for the last five years and who is currently under construction in the sector and the number of projects implemented in the last five years by the contractor organization. From the participants in the majority of the contractor's organization participated in less than 5projets in Jima city building construction projects.

4.3.2 General Information for Client and regulatory bodies respondents

The respondents are Owner and owner representative for client while organization managers, Structural designer, Electrician, architectural designer, plumber and surveyors as they have a practical experience in building construction organizations under regulatory body. Their experience ranges from 6-10 years for those working in regulatory firms and for those working in client firms is less than five years. This implies that their experience is sufficient to find out relative importance of project influencing factors to use buildings under-construction in building construction projects of Jimma city.

Table 4.2: General Information for Client and regulatory bodies

Type of Organization	Title*	Qualification	Experience	Frequency
Client	OR	Civil Engineering	<5	6
	O	Non-Engineering	-	16
Regulatory bodies	OM	Civil Engineering	6-10	3
	SD	Structural Engineering	"	2
	S	Surveying	"	3
	AD	Architectural Engineering	"	4
	ED	Electrical Engineering	"	4
	SD	Sanitary Engineering	"	3
Total				30

Where: OR-Owner Representative, O-Owner, OM-Organizational Manager, SD-Structural Engineer, S-Surveyor, AD-Architectural Engineer, ED- Electrical Engineer

4.3.3 General information about end user respondents

A. Role of Respondent in the organizations

Table 4.3: Role of the end-user respondent of an organization

No	Role of respondent	Service	Frequency rate
1	Branch Manager	Bank	14
2		Ethio. Telecom	2
3	Merchants	Commercial center	17
4		Education	2
Total			35

B. Overall performance of organization compared to other branch which give service under the finished building

Table 4.4: Performance of end user respondent of the organization

Assignment	Poor	fair	Good	Excellent
Rate	1	2	3	4
Frequency	22	11	2	0
Response Rate	62.86%	31.43%	5.71%	0.00%

C. End user response on responsible for the accident happened the on site

Table 4.5: End user response on responsible for the accident happened the on site

Risk Sharing	Frequency	Response Rate
Owner	7	20.00%
Contractor	13	37.14%
Consultant	1	2.86%
Regulatory bodies	5	14.29%
Your Organization	3	8.57%
Insurance Company	2	5.71%
No Idea	4	11.43%
Total	35	100.00%

4.4 Is It a Problem or Not Opening Building Under Construction to the Service?

Generally, before identifying the major influencing factors of using building under construction projects and their respective sever effects, the existence of using building under construction in building projects has to be confirmed first. Hence, the first step in this research was devoted to check whether using building under construction was there and still is a problem or not in Jimma city building construction projects.

Q* $_{1-}$ Is there building under construction are open to the service in Jimma city?

Q* $_{2}$ – Is it a problem or not opening building under construction to the service?

Table 4. 6: Response on Is using building under construction problem or not

Type of Organization	Q* $_1$	Q* $_2$	Frequency		Percentage of responded
			Responded	Total	
Client	Yes	Yes	18	22	81.8%
		No	4		18.2%
Contractor	Yes	Yes	27	27	100.0%
		No	0		
Regulatory bodies	Yes	Yes	19	20	95.0%
		No	1		5.0%
Total				69	

Accordingly, the result obtained in table 4.6 indicates that it was a problem to open the building to the service which is under construction. Most Regulatory bodies and contractors agree that projects were delayed due to interference in technical and engineering aspects in addition to approvals. They feel this sensitive problem in their projects. Regulatory bodies and contractors usually suffer from this problem. However, most of the end user and clients are not considering a problem.

4.5 The Influencing Factors of Using Buildings Under Construction

The first specific objective of this study was to identify the influencing factors of using buildings under construction in Jimma city. A total of 51 factors has been identified from literature review and sub categorizes under 7 influencing factors from questionnaires and presented in questioner appendix:

4.5.1 Types of Influencing Factors

4.5.1.1 Cost Related Factors

The list of eleven sub-cost related factors considered as the cost influencing factors to use building under construction. Table 4.7 summarizes and presents the cost related factors and their associated RII and rank.

Table 4.7: Summary of Rank and Ave. RII of cost related factors

S No.	Code	Cost related Factors	Contractor		Client		Regulatory bodies		Overall	
			RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
1	A	Funding problems or client's shortage of finance	0.69	2	0.63	8	0.74	2	0.687	3
2	B	Cost under estimation	0.63	8	0.67	3	0.71	4	0.670	4
3	C	Decrease of labour productivity while increase their wage	0.64	7	0.65	6	0.65	8	0.647	7
4	D	Increase of consultancy service fees	0.55	11	0.55	11	0.55	11	0.550	11
5	E	Inflation or increase in the cost of construction materials	0.77	1	0.77	1	0.79	1	0.777	1
6	F	Inadequate financial planning	0.67	3	0.65	4	0.66	5	0.660	5
7	G	Absence of construction-cost data	0.56	10	0.65	4	0.66	5	0.623	9
8	H	Number of constructions going on at same time	0.67	3	0.60	10	0.60	10	0.623	9
9	I	Economic stability	0.66	5	0.64	7	0.66	5	0.653	6
10	J	Previous experience of the contract	0.65	6	0.71	2	0.74	2	0.700	2
11	K	Frequent design change & lack of coordination b/n designers &contractors	0.63	8	0.61	9	0.65	8	0.630	8

Inflation or increase in the cost of construction materials has been ranked by all respondents in the first position. It is observed that this influencing factor is more important for contractor because Inflation of material costs affects the cash flow of contractor. Fluctuation in prices has a significant impact on cost increase and limits the capability of contractor to run the construction with contract price, so that enforces the parties to search additional income source to cover the cost of construction materials because of inflation. Because this the contractor carried out the construction depending

on the construction materials of the present prices at local markets with the option provided by owner. In case of the option running two phases once (using building under-construction, the contractor would face the problem of cost overruns at the execution phase.

Funding problems or client's shortage of finance has been ranked by the contractors and regulatory bodies respondents in the second position. It has been ranked by the client respondents in the eighth position. It is remarked that this factor is more important for contractors and regulatory bodies than for client.

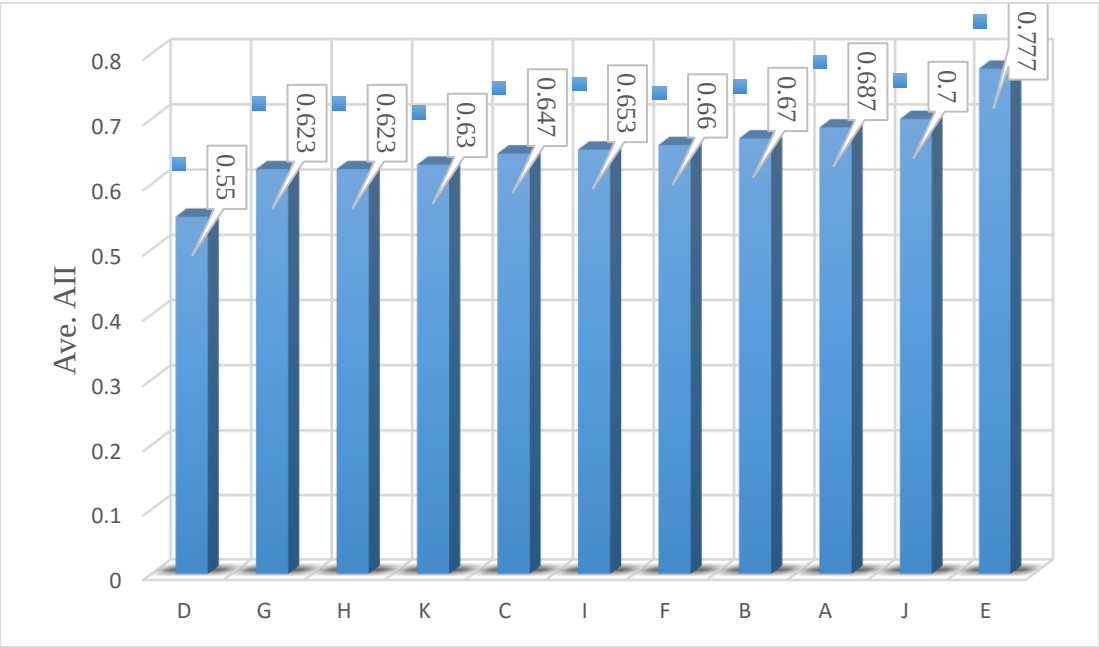


Figure 4.7: Rank and RII of group of cost related factors

Based on in the above figure 4.7 Inflation or increase in the cost of construction materials is ranked 1st from 11 groups of factors with Ave. RII 0.777 which shows that Inflation or increase in the cost of construction materials is the most dominant influencing factor that leads to use building under-construction with respect to cost related factors. Previous experience of the contract influencing Factor rank at 2nd place with Ave. RII 0.700 and while Funding problems or client's shortage of finance is ranked in the 3rd place with Ave. RII 0.687.

4.5.1.2 Time Related Factors

The list of Nine sub-Time related factors considered as the time influencing factors to use building under construction. Table 4.8 summarizes and presents the time related factors and their associated RII and rank.

Table 4.8: RII and Rank summaries of the time related factors

Time-Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Poor planning and scheduling of the project by the contractor	0.6	6	0.69	1	0.68	3	0.657	3
Severe weather conditions on the job site	0.65	4	0.53	7	0.52	8	0.567	7
Shortage of skilled &technical professionals in the contractor's organization	0.56	7	0.59	5	0.66	5	0.603	5
Poor coordination by the consultant's engineers with the parties involved	0.63	5	0.36	8	0.69	1	0.560	8
Improper handling of the project progress by the contractor	0.56	7	0.6	4	0.62	6	0.593	6
Executive bureaucracy in the client's organization	0.68	3	0.55	6	0.59	7	0.607	4
Less number of Personnel and staff for supervision	0.73	2	0.68	2	0.69	1	0.700	1
Decrease productivity of workforce	0.77	1	0.66	3	0.67	4	0.700	1

From table 4.8; both a smaller number of personnel and staff for supervision and Decrease productivity of the workforce are ranked 1st from 9 groups of time-related factors with Ave. RII 0.700 which shows that they are the most dominant influencing factor that leads to the use building under-construction for time-related factors. Poor planning and scheduling of the project by the contractor influencing Factor rank at 3rd place with Ave. RII 0.657 and while Executive bureaucracy in the client's organization is ranked in the 4th place with Ave. RII 0.607.

4.5.1.3 Risk Related Factors

The list of Nine Sub-Risk related factors considered as the risk influencing factors to use building under construction. Table 4.9 summarizes and presents the Risk related factors and their associated RII and rank.

Table 4.9: RII and Rank summaries of the Risk related factors

Risk Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Less consideration of excepted risks and Indemnities that the Client has contractually undertaken to be assume.	0.66	4	0.55	7	0.79	2	0.66	4
Non-Involvement of consultant for design and Supervision & tender document preparation	0.72	2	0.82	1	0.80	1	0.78	1
Different consultant for design and Supervision	0.72	2	0.55	7	0.63	7	0.63	6
Unable to forecast potential risks (Quantify them)	0.73	1	0.70	3	0.69	4	0.71	3
Less Experience and ability of contractor on risk assessing, controlling and taking	0.65	5	0.60	5	0.63	7	0.63	8
Having effective health and safety program (contractor)	0.56	9	0.48	9	0.54	9	0.53	9
Unclear Legal restricting in obtaining occupancy permits and controlling mechanism	0.63	7	0.58	6	0.68	5	0.63	7
Unexpected weather condition	0.62	8	0.77	2	0.77	3	0.72	2
Need of work	0.64	6	0.65	4	0.67	6	0.65	5

According to the contractor respondents Unable to forecast potential risks (Quantify them) has been ranked in 1st position with RII of 0.73 while it has been ranked by the client and regulatory bodies respondents in the 3rd & 4th position with RII of 0.70 & 0.69 respectively. But on average of the respondent ranked it at 3rd position with Ave. RII of 0.707.

Non-Involvement of consultant for design and Supervision & tender document preparation and Different consultant for design and Supervision has been ranked by contractor in 2nd position with RII of 0.72 while the client and regulatory bodies respondents ranked in the 1st position with RII of 0.82 & 0.80 & 7th position with RII of 0.55& 0.63 respectively. But on average of the respondent ranked Non-Involvement of consultant for design and Supervision & tender document preparation at 1st position with Ave. RII of 0.780.

The following fig. 4.8 shows the average relative importance index (Ave. RII) and rank of Risk Related Factors.

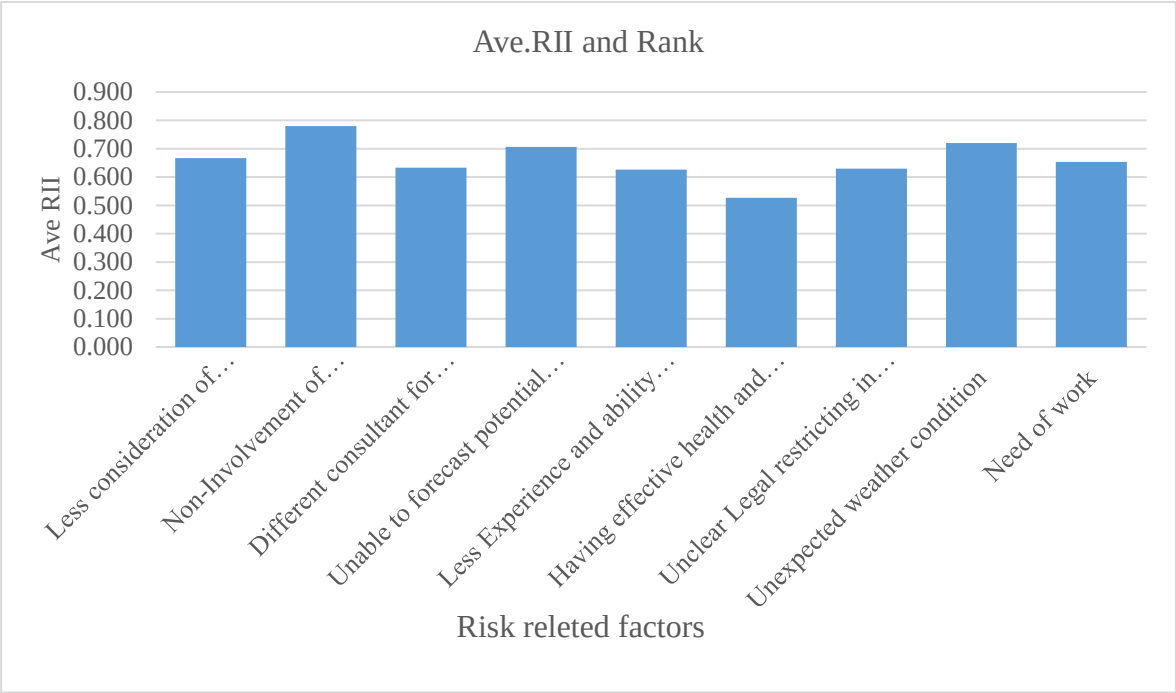


Figure 4.8: Average Relative importance index and rank of Risk Related Factors

4.5.1.4 Material Related Factors

The list of basic three Sub-Material related factors which are considered as the Material influencing factors to use building under construction. Table 4.10 summarizes and presents the Material related factors and their associated RII and rank.

Table 4.10: RII and Rank summaries of the Material related factors

Material Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Suitability of material storage on site	0.58	3	0.68	1	0.59	1	0.617	1
High control of material on site	0.64	1	0.55	3	0.54	3	0.577	3
Non-Availability of resources	0.63	2	0.57	2	0.59	1	0.597	2

High control of material on site has been ranked by the contractor's respondents in 1st position with RII of 0.64 while it has been ranked by the client and regulatory bodies respondents in the 3rd position with RII of 0.55 and 0.54 respectively. But on average of the respondent ranked it at 3rd position with Ave. RII of 0.577.

According to contractors, and the client Non-Availability of resources was the 2nd most important influencing factor with respect to material related factors with RII = 0.63 for contractors and RII = 0.57 for clients while ranked in 1st position of regulatory bodies respondents with RII of 0.59. But on average of the respondent its ranked at 2nd position with Ave. RII of 0.597.

Suitability of material storage on site has been ranked by the contractor's respondents in 3rd position with RII of 0.58 while it has been ranked by the client and regulatory bodies respondents in the 1st position with RII of 0.68 and 0.59 respectively. But on average of the respondent ranked it at 1st position with Ave. RII of 0.617 which is shown in figure 4.9. Materials are often wasted because they are damaged during storage.

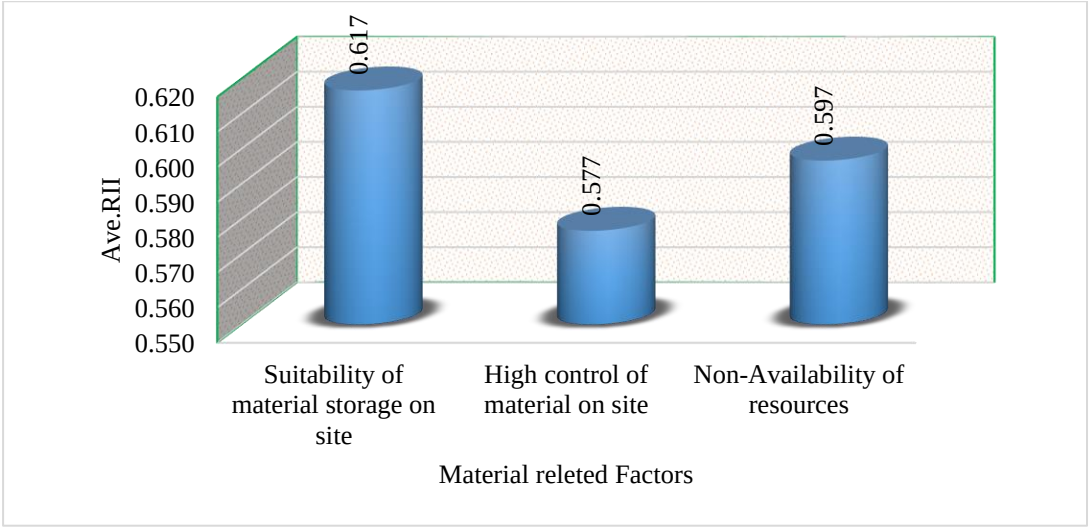


Figure 4.9: Rank and Ave. RII of group of Material Related Factors

4.5.1.5 Skilled Manpower and Labor Related Factors

The list of Nine Sub- Skilled Manpower and Labor related factors considered as the Skilled Manpower and Labor influencing factors to use building under construction. Table 4.11 Summarizes and presents the Skilled Manpower and Labor related factors and their associated RII and rank.

Table 4.11: RII and Rank summaries of the Manpower related factors

Skilled Manpower and Labor Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
The level of management control	0.68	3	0.61	4	0.65	4	0.488	7
Professionalism of the design team	0.56	7	0.61	4	0.64	6	0.495	6

Difficulties in employing site supervisor	0.63	6	0.49	7	0.68	1	0.495	5
Incompetence of site supervisor	0.67	5	0.65	3	0.65	4	0.514	4
Late inspection of completed work	0.73	2	0.66	1	0.67	2	0.515	3
Turnover and Absenteeism (Labor)	0.74	1	0.61	4	0.61	7	0.516	2
Disturbance, Communication problems and Frequent changes in labors	0.68	3	0.65	2	0.66	3	0.528	1

Turnover and Absenteeism (Labor) has been ranked by the contractor's respondents in first position but has been ranked by the client respondents in the fourth position and regulatory bodies respondents in the seventh position. Turnover and Absenteeism (Labor) needs to be less for coordinate efforts, leading to improvement in quality of the works and the system of construction enforces to use building under construction.

Late inspection of completed work has been ranked by the contractor and regulatory bodies respondents in the second position. But it has been ranked in the first position for clients' respondents.

Disturbance, Communication problems & Frequent changes in labors and the level of management control has been ranked by the contractor's respondents in third position while regulatory bodies respondents in third & fourth position respectively. but they have been ranked by the client respondents in the second& fourth position. they need to be effective for coordinate efforts, leading and control the management levels to improvement in quality of the works.

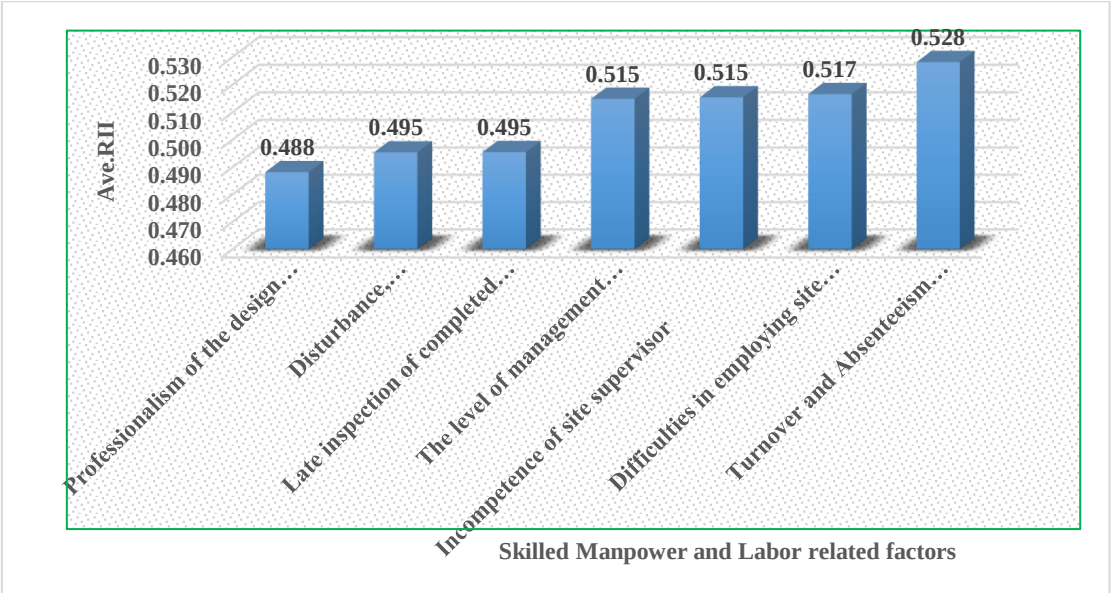


Figure 4.10: Summary of the group Skilled Manpower and Labor related factors

4.5.1.6 Regulatory Bodies related factors Related Factors

The list of Nine Sub- Regulatory Bodies related factors considered as the Regulatory Bodies influencing factors to use building under construction as shown in the table 4.12.

Table 4.12: RII and Rank summaries of Regulatory Bodies related factors

Regulatory Bodies Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave RII	Rank
Concepts for urban development are not transparent and retraceable	0.67	3	0.75	4	0.73	4	0.717	4
There are not enough qualified construction professionals to fulfil the demands of the market	0.60	5	0.58	6	0.60	6	0.593	6
Unclear Legal restricting in obtaining occupancy permits and controlling mechanism	0.57	6	0.65	5	0.65	5	0.623	5
Bribery /Corruption	0.71	2	0.87	2	0.84	2	0.807	2
Political influences	0.72	1	0.90	1	0.85	1	0.823	1
Less number of Personnel and staff for supervision	0.67	3	0.77	3	0.74	3	0.727	3

From the table 4.12 the analyzed result shows that Political influences, Bribery /Corruption, and a smaller number of Personnel &staff for supervision have been ranked by the contractor, regulatory bodies and client's respondents in the 1st ,2nd and 3rd position with the Ave. RII of 0.823, 0.807, and 0.727 respectively. The summery of influencing factors regarding to regulatory bodies are elaborated in the figure 4.11.

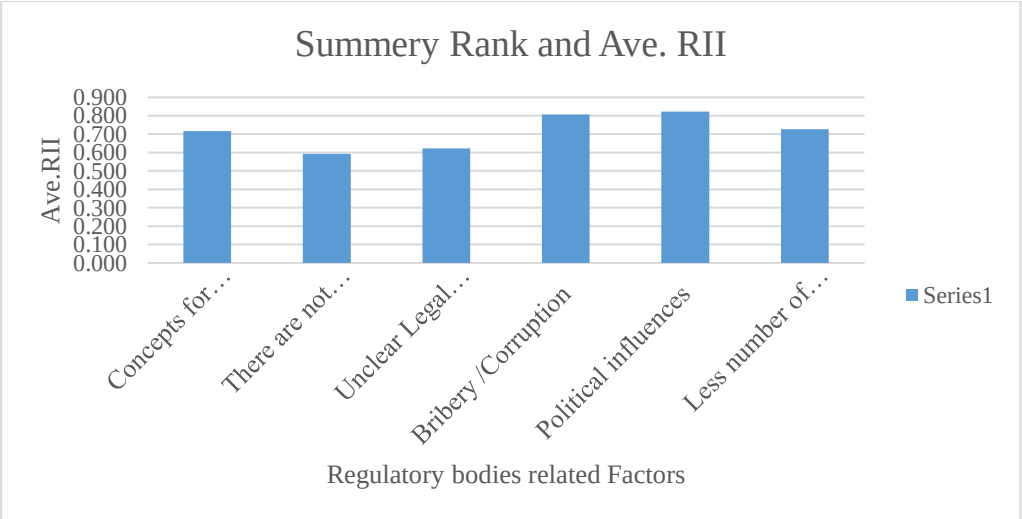


Figure 4.11: Summary of the group Regulatory bodies related Factors

4.5.1.7 End User Related Factors

The list of Six Sub- End User related factors considered as the End User influencing factors to use building under construction as shown in the table 4.13 below.

Table 4.13: RII and Rank summaries of End User related factors

End-User Related Factors	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Attractive pressure on owner by increase source of revenue for the owner/client of the building	0.74	3	0.76	4	0.75	6	0.750	5
Source of income for government in the form of taxation	0.79	2	0.82	2	0.84	3	0.817	1
Source of revenue for the organization use the building	0.47	6	0.85	1	0.94	1	0.753	4
Source of revenue for the employee of the organization	0.74	3	0.82	2	0.82	5	0.793	3
Solving the scarcity of commercial center in the city and or needs of building	0.72	5	0.66	6	0.85	2	0.743	6
Decreasing unemployment rate	0.81	1	0.75	5	0.83	4	0.797	2

The decreasing unemployment rate has been ranked by the contractor's respondents in the 1st position while regulatory bodies and client respondents in the 5th& 4th positions respectively. However, they have been ranked on average of respondents in the 2nd position with Ave. RII of 0.797.

Source of income for the government in the form of taxation has been ranked by the contractor and client respondents in 2nd position while regulatory bodies respondents in the 3rd position respectively. Nevertheless, it has been ranked on average of respondents in the 1st position with Ave. RII of 0.817.

The contractor respondents have ranked source of revenue for the employee of the organization and Attractive pressure on owner by increase source of revenue for the owner/client of the building in 3rd position while client respondent ranks in 2nd& 4th and regulatory bodies respondent ranks in 5th&6th respectively. However, Source of revenue for the employee of the organization has been ranked on average of respondents in the 3rd position with Ave. RII of 0.793.

The summaries of End User related factors ranked on average of respondent's response are elaborated in the figure 4.12 below.

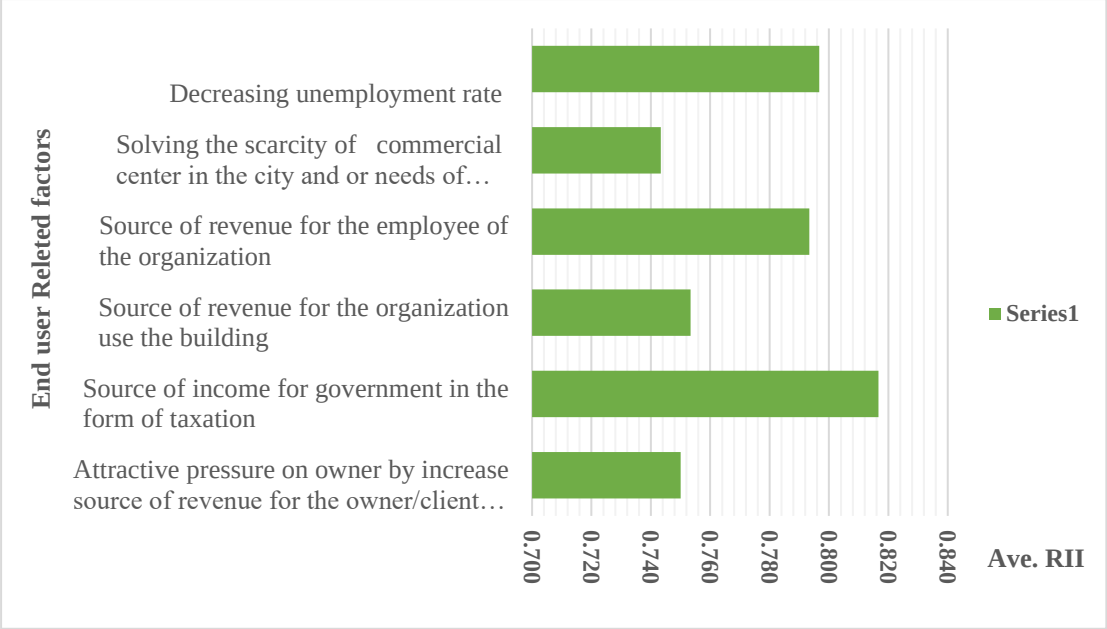


Figure 4.12: RII and Rank summaries of End User related factors

From interview the End user response on influencing factors of using building under construction are: Lack of Safety Knowledge or awareness, easily accessibility of the service for Customers in the form of attraction and Enforcement of law is low are the main influencing factor for using building under constructions eve if there are free buildings floors G+3 and above which are ready for rental.

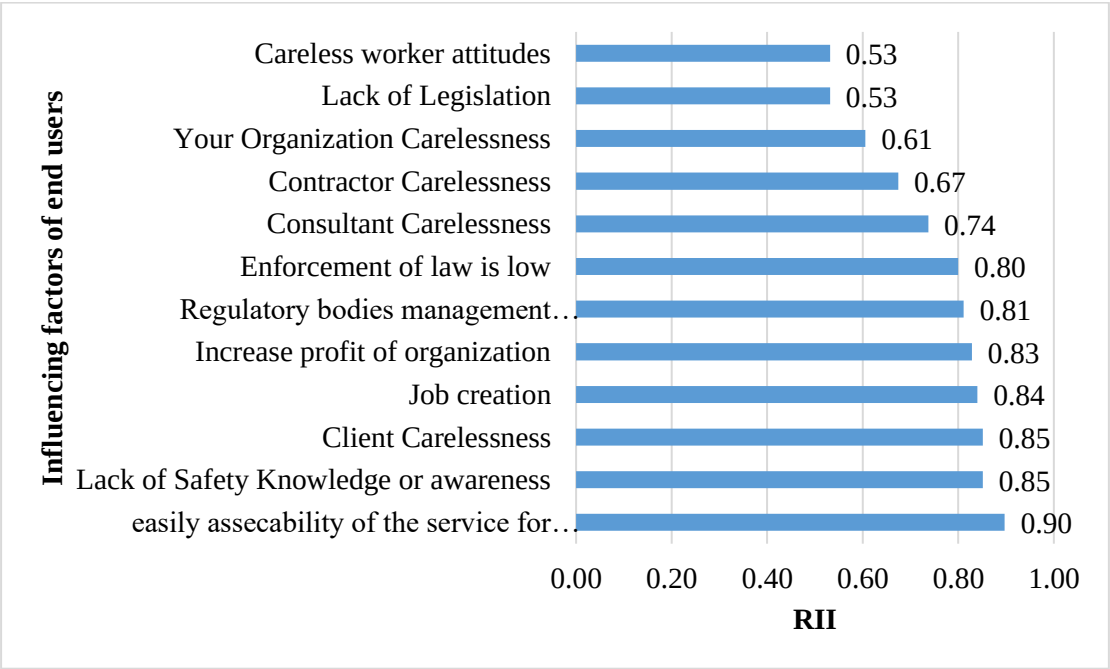


Figure 4.13: Interview response on Influencing factors of end users

4.5.2 Major influencing factors of using building under construction

Analyzing numerous factors is not sufficient and the concerned body should be focused on handling main problems facing the construction projects. These factors can be ranked based on their expected values (average values), their standard deviations (or variances) or other methods like sensitivity analysis approaches according to their capacity to change the total cost or schedule. As a rule of thumb, some teams decide to consider only the top 10 or the top 15 risk factors. Others might use other criteria. One such criterion is the Pareto's Law: i.e., 20% of risk items are responsible for 80% of the cost increase, so those are the risks that need to be considered" (Touran, 2006).

Based on the idea of Pareto's law described in the literature above the 20% of the factors were selected as the top ten (10) significant factors obtained from the analysis based on their importance.

The list of fifty-One Sub- factors considered as the influencing factors to use building under construction that appeared in the appendix and the top ten most influencing factors according to the RII are as shown in the table 4.14 below were: Political influences**,** Source of income for government in the form of taxation, Bribery /Corruption, Decreasing unemployment rate, Source of revenue for the employee of the organization, Inflation or increase in the cost of construction materials, Non-Involvement of consultant for design and Supervision & tender document preparation, Attractive pressure on owner by increase source of revenue for the owner/client of the building, Solving the scarcity of commercial center in the city and or needs of building, and Source of revenue for the organization use the buildings.

Table 4.14: Top ten influencing factors of using building under construction project

No.	Description of Factors	AI	RII	Rank
1	Political influences	4.07	0.814	1
2	Source of income for government in the form of taxation	4.07	0.814	1
3	Bribery /Corruption	4	0.800	3
4	Decreasing unemployment rate	3.97	0.794	4
5	Source of revenue for the employee of the organization	3.94	0.788	5
6	Inflation or increase in the cost of construction materials	3.88	0.777	6
7	Non-Involvement of consultant for design and Supervision & tender document preparation	3.87	0.774	7
8	Attractive pressure on owner by increase source of revenue for the owner/client of the building	3.75	0.751	8
9	Solving the scarcity of commercial center in the city and or needs of building	3.7	0.739	9

10	Source of revenue for the organization use the building	3.8	0.728	10

As shown in table 4.14; the outcome of the study showed that the values for the relative importance index above 0.80 and average index over 4.00 where Political influences, Source of income for government in the form of taxation and Bribery /Corruption have been the highest RII and AI.

4.6 Effects of Using Buildings Under Construction

4.6.1 Types of Effects of Using Buildings Under Construction

4.6.1.1 Social Effects of Using Buildings Under Construction

This part of the research provides the analysis and the results to meet the second objective of the study, which was focused on the Social effects of using buildings under construction in Jimma City. Accordingly, based on the response from each party, the Relative Importance Index (RII) for each common social effect was calculated on the contractor, client, and Regulatory Bodies' perspective and were computed to rank the factors based on the overall effect and presented under the following tables 4.15**.**

Table 4.15: Rank of social effects of using buildings under construction

Social Effects	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave .RII	Rank
Increase the rate of accident onsite heating head body including feet of occupant or user	0.78	1	0.59	4	0.77	5	0.716	3
Decrease design life of the building	0.60	6	0.609	3	0.7	7	0.632	6
Increase traffic flow	0.75	3	0.645	1	0.84	1	0.742	1
Air pollution	0.67	4	0.582	5	0.82	3	0.684	4
High noise generation	0.77	2	0.645	1	0.81	4	0.742	1
Increase pressure on utilities	0.66	5	0.509	6	0.75	6	0.638	5
Divert the culture of construction not only local but also foreign participates of the industry	0.533	7	0.509	6	0.83	2	0.612	7

From table 4.15 above the analyzed result shows that Increase the rate of accident onsite (Falling object (blocks, bricks, debris) heating head body including feet of occupant or user) has been ranked by the contractor's respondents in 1st position with while it has been ranked by the client and regulatory bodies respondents in the 4th& 5th position with RII of 0.591 and 0.770 respectively. Nevertheless, on average of the respondent

ranked it at 3rd position with Ave. RII of 0.716 so leads to Physical risks of health highly.

According to contractors, High noise generation and Increase traffic flow was ranked in the 2nd and 3rd position with RII = 0.770 & 0.748 for contractors respectively. While High noise generation and increase traffic, flow was ranked in 1st position for the client with RII=0.645 and High noise generation and Increase traffic flow was ranked at 4th& 1st position for the regulatory bodies' respondents with RII of 0.810 &0.840respectively. However, on average of the respondent, it is ranked at 1st position with Ave. RII of 0.742.

Increase traffic flow in the new facilities have led to a general increase in traffic, e.g. from users, shoppers, increased numbers of employees etc. so that increase the pressure on the utilities or services because the facility was open while construction was continuing, the dirt (pollutants in the dust) was a major problem shop materials, bedclothes and food ingredients were covered in dust, even when the windows were closed. This leads to health problems particularly asthma, bronchitis, conjunctivitis, and coughing were aggravated for the users and local businesses, and this reduced custom. And also, people were stressed by vibration from demolition and drilling at the same time that causes disturbance on residents, businesses organizations and public at all e.g. Residents and businesses could not pick up terrestrial TV as the construction site blocked signals. This detracted from business, e.g. for cafes who would normally have TV on for their customers.

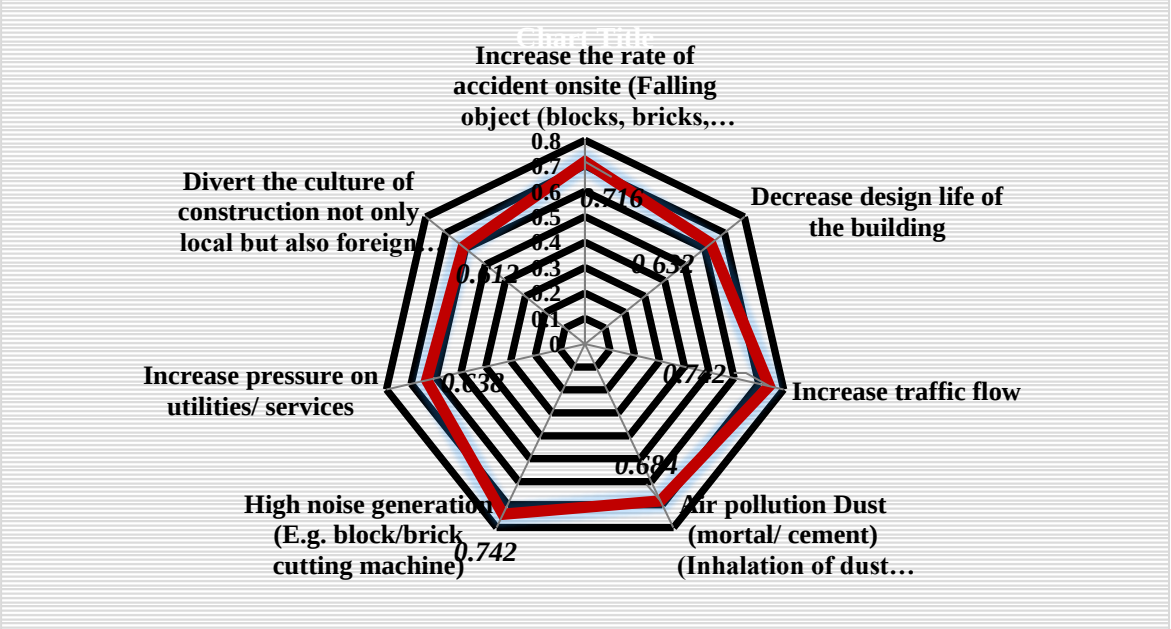


Figure 4.14: Ave. RII of social effects of using buildings under construction

4.6.1.2 Economic effects of using buildings under construction

This group consists of eleven economic effects connected with using buildings under construction. table 4.16: presents the summary of the result obtained in the study under this group.

Table 4.16: Economic effects of using buildings under construction

Economic Effects	Contractor		Client		Regulatory bodies		Overall	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Overcrowded site so difficult to manage materials on-site and Material on-site are exposed to theft lead to additional cost	0.800	1	0.673	1	0.82	4	0.765	1
Delay of the project because of decrease the productivity of workforce onsite	0.644	7	0.573	6	0.85	1	0.681	4
Decrease the productivity of employee of organizations because of disturbance on site	0.741	3	0.664	3	0.83	3	0.742	3
High maintenance cost because of early open to service	0.659	6	0.555	7	0.75	5	0.652	7
The high cost of the accident on the workforce of the industry plus public who uses the service	0.763	2	0.673	1	0.84	2	0.757	2
Special care is needed over conventional construction system (Scaffolding) and Needs high cost for health and safety in a special way	0.741	3	0.600	4	0.66	7	0.672	5
May lead to total failure of structures	0.689	5	0.591	5	0.73	6	0.670	6

Overcrowded site so difficult to manage materials on-site and Material on-site are exposed to theft lead to additional cost have been ranked by the contractor's and client respondents in 1st position with RII of 0.800 and 0.673 respectively. While it has been ranked by the regulatory bodies' respondents in the 4th position with RII of 0.820. Nevertheless, on average of the respondent ranked it at 1st position with Ave. RII of 0.765.

Since the site Overcrowded site so difficult to manage materials on-site and Material on-site are dumped at road so needs transporting to the slab as storage places unless it exposed to theft lead to additional cost.

According to contractors and regulatory bodies respondent, the High cost of the accident on the workforce of the industry plus public who uses the service was ranked in the 2nd position with RII = 0.763 and 0.840 respectively. While it was ranked in 1st position for the client with RII=0.673. Nevertheless, on average of the respondent, it is ranked at 2nd position with Ave. RII of 0.757.

This risk of occupational accidents is more severe in developing countries like where the safety and regulatory actions are loose since using building under construction is obvious in the culture of construction of Ethiopia which increase the accident rate occurrence not only on the workforce of the industry but also on the public who uses the service so that the cost to cover the rate is high.

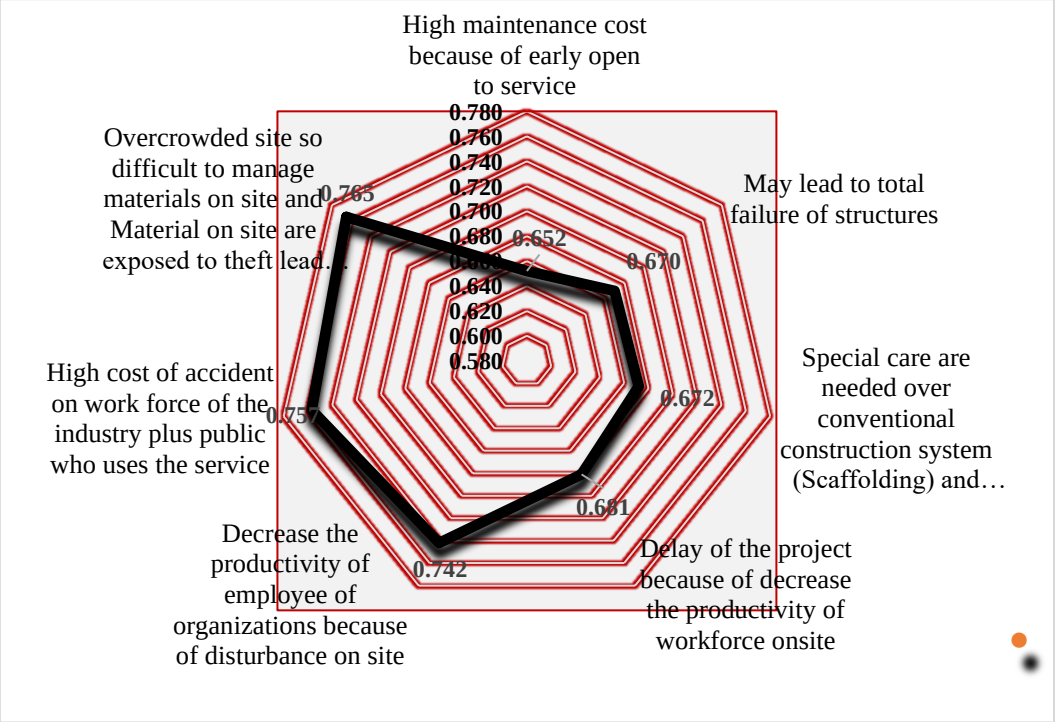


Figure 4.15: Ave. RII of economic effects of using buildings under construction

Case Study on Cost and Time of the Project with respect to economic effect

Table 4.17: Case-1 Information of Project XXX

	Item	Date	Amount (Birr)
Information Related to Cost	Main Contract		12,775,385.17
	Supp. Agreement		--
	Variation order		2,154,002.43
	Percentage of project progress	15/5/2012	45%
	Planned project progress cost		5,748,923.33
	Actual cost (Project progress cost + variations)		7,902,925.76
	Rented Amount	Nine-month	48,000 per month

Information Related to Time	Contract Date	6/2/2011 E.C.	
	Commencement Date	6/2/2011 E.C.	
	Project duration completion	512 days	
	Force majeure	45 days	
	Up-to-date (15/6/2012) actual project time used from contract	465 days	
	Remaining contract time according to the main contract	47 days	
	Remaining contract time with justification because of force majeure	92 days	

Time and Cost Analysis of the Project XXX Case

According to the planned agreement for 45% of the project shall complete with at the consumption of 231.75 days but the actual project progress consumes 465-45days=420 days. this implies that the project will be completed within 47days according to the main contract duration to complete the project.

Mathematically, the amount of time needed for the remaining 55% percentage of the project of the work is 513.33 days.

1) If 420 Days = 45%

   X= 55% => X= (420days*55%)/45% => X= 513.33 days

2) If 515 Days = 100%

   X= 45% => X= (515days*45%)/100% => X= 231.75 days

But 45 % consumes 420 Days

⇨ 420days – 231.75= 188.25days delayed beyond the planned schedule

Therefore, the percentage of time over run of the project up to date is calculated as

TOR for the project progress= (188.25days/231.75days) *100%= 81.3%

Cost Analysis for the progress of the project based on EVM

PV= 12,775,385.17 Birr

AC = 7,902,925.76 Birr

EV = 45%* PV= 5,748,923.33 Birr

Total Rented Revenue Amount up to date = 9 month *48,000 Birr per month

= 432,000 Birr

Cost overrun of current project = AC – EV- Rental Revenue

progress = 7,902,925.76 Birr - 5,748,923.33 Birr-432,000 Birr

= 1,722,002.43 Birr

Percentage of cost overrun of current project progress = $\frac{1,722,002.43 \text{ Birr}}{5,748,923.33 \text{ Birr}} * 100\% = 29.95\%$

Project Final Cost and Time Prediction

A. Budget at Completion (BAC) represents total planned project costs as well as a contingency for management reserve.

BAC = Total Planned Project Cost + Contingency Cost

BAC = 12,775,385.17 Birr + 0 Birr

= 12,775,385.17 Birr

B. Estimate at Completion (EAC) represents the sum of all current actual costs plus all remaining costs to complete a task or project.

EAC = Budget at Completion / Cost Performance Index

Where CPI = EV/ AC

The Cost Performance Index (CPI) measures the rate at which value is earned for the actual costs incurred or a measure of the cost efficiency of the work accomplished. As stated by the PMI, the CPI gauges how efficiently the team is using its resources.

CPI = 5,748,923.33 Birr / 7,902,925.76 Birr = 0.7274

Since 0.7274 < 1 over budgeted

So, EAC = BAC/ CPI

$$= \frac{12,775,385.17 \text{ Birr}}{0.7274} = 17,562,057.23 \text{ Birr}$$

C. The metric for a project manager to discover whether the project will finish under or over budget is Variance at Completion or VAC. The VAC is the result of subtraction of the EAC from the BAC. VAC = BAC - EAC. When VAC>0, project manager finds that the project will finish under budget on the other hand, when VAC<0, the project manager finds that the project will finish over budget.

Variance at Completion (VAC) = BAC - EAC

VAC = 12,775,385.17 Birr - 17,562,057.23 Birr = -4,786,672.06 Birr

Therefore; - 4,786,672.06 < 0 then the project will finish over budget.

D. Time Estimate at Completion (EAC_T) is a metric which makes a project manager to generate a rough estimate of when the project will be completed if the current trends continue.

Time Estimate at Completion (EAC_T) = BAC / SPI

But, Where SPI is Schedule Performance Index which is the rate of progress against the original schedule with respect to time, or a measure of schedule efficiency of the work accomplished.

SPI = EV/ PV= 5,748,923.33 Birr / 12,775,385.17 Birr

= 0.45 So these implies 0.45 < 1; the project is behind the schedule.

Then; EAC_T = BAC / SPI

= 12,775,385.17 Birr / 0.45 = 28,389,744.8 Birr; These implies if the current trends continue the current project will be completed at this amount of cost.

So, these shows that using building under construction projects are not profitable towards the construction industry and has negative consequences on the economy of the country and most of the losses are on the owner contractor and end users.

4.6.2 Significant Effects of Using Buildings under Construction

Generally, from lists of current five significant effects building construction projects, their degree effect of using Buildings under Construction was also presented to the respondents to rank and score them. Accordingly, based on the response from each party, the Relative Importance Index (RII) for each significant effect was calculated on the contractor, Client, and Regulatory Bodies' perspective were computed to rank the factors based on the overall effect and presented hereunder.

Table 4.18: Summery of Significant Effects of Using Buildings under Construction

Major Effects	Contractor		Client		Regulatory bodies		Over-All	
	RII	Rank	RII	Rank	RII	Rank	Ave. RII	Rank
Cost overrun	0.733	3	0.618	3	0.830	1	0.725	1
Time overrun	0.770	1	0.609	4	0.770	2	0.719	3
Risk	0.770	1	0.627	2	0.770	2	0.725	1
Loss of quality	0.711	5	0.573	5	0.750	4	0.678	5
Dispute	0.719	4	0.673	1	0.740	5	0.710	4

From the results of analysis based on overall respondents, as it is shown from the above table 4.18, the RII could be categorized into three. The factors with RII value lying between 3.5000 and 4.5000 are categorized under high impact which accounts for80.93% of the effects from the listed 5 (five) common effects. Cost overrun with Ave, RII= 0.725, AI=3.62 and frequency of 20.37%, Risk with Ave, RII= 0.725, AI=3.62 and frequency of 20.37%, Time overrun with Ave, RII= 0.719, AI=3.59 and frequency of 20.21%, and Dispute with Ave, RII= 0.710, AI=3.55 and frequency of

19.97% are one of the significant primary effects of Using Buildings under Construction in Jimma City building projects.

The factors with RII value lying between 2.5000 and 3.5000 are categorized under average impact which accounts for19.07 % of the common effects listed. Loss of quality with Ave, RII= 0.678, AI=3.39 and frequency of 19.07% is categorized under the average impact. Whereas, the factors with RII value lying between 1.5000 and 2.5000 are categorized under minor impact which accounts for 0% of the chronic effects of efficiency factors.

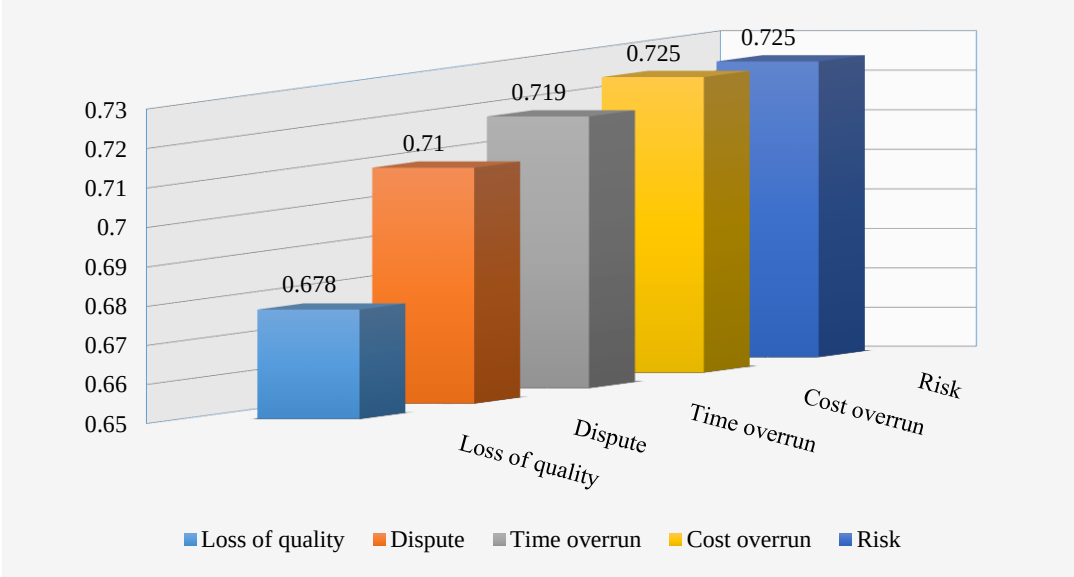


Figure 4.16: Ave. RII of Major Effects of Using Buildings under Construction

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This research assessed the influencing factors and effects of using building under construction in Jimma City; and to identify the influencing factors, social effects and to determine the economic effects of using buildings under construction in Jimma city.
In this study, a total of 51 factors those influence to use building under construction were considered; based on a careful review of literature and suggestions from local experts in building construction industry. Then after the factors were divided into seven categories which were ranked according to their importance index: cost, time, risk, material, regulatory bodies, manpower and end users related factors. The results show that the end users related factors are the main influencing factors for using buildings under construction.

From the above categories, top 10 high significant influencing factors (six from end users, two from regulatory bodies, one from risk and one from cost) were identified based on their RII value. These are; Political influences**,** Source of income for government in the form of taxation, Bribery Corruption, Decreasing unemployment rate, Source of revenue for the employee of the organization, Inflation or increase in the cost of construction materials , Non-Involvement of consultant for design and Supervision & tender document preparation, Attractive pressure on owner by increase source of revenue for the owner/client of the building, Solving the scarcity of commercial center in the city and or needs of building, and source of revenue for the organization use the building.

Furthermore; the study identified both negative and positive social and economic effects of using building under construction and ranked them based on their relative importance index value. The result showed that the major negative social effects are: Increase traffic flow, High noise generation, Increase the rate of accident onsite, Air pollution (Inhalation of dust cause cancer & respiratory system problem), Increase pressure on utilities, Decrease design life of the building, Divert the culture of construction not only local but also foreign participates of the industry. While positive

social effects are; Decreasing unemployment rate and Solving the scarcity of commercial center in the city.

Also; the major negative economic effects of using building under construction are: Difficult to manage materials on the site due to overcrowded, decrease labour productivity and Delay the project because of site disturbance, Increase cost of health and safety in special way than conventional construction system. While positive economic effects are: Source of revenue for the owner, organization using the building, employee of the organization and government in the form of taxation.

Therefore; the study concludes that continuous trend of using building under construction causes 29.95% cost overrun and 81.3% time overrun on the project. So these indicate that using building under construction are not profitable towards cost and time of construction project and has negative effect on the economy of the country: Mostly; the owner, contractor and end users are affected parties.

5.2 Recommendation

Considering the obtained results of this research, the following points can be recommended for stakeholders in the city of Jimma on the building construction projects and end users of the buildings.

Recommendations for contractors:

- ☞ The contractor Should prioritize safety, health, and welfare of the public based on professional ethics.
- ☞ The contractor Should give advises for the end users not to use unfinished building for services.
- ☞ The contractor should Follow proper accident protection techniques and good site management mechanism for safe working environment.
- ☞ The contractor of the project should have preparing proper construction protection and satisfactory working environments or good site management mechanism; in addition to the procure skillful and experienced workers who have ability of operating available machineries at site in order to increase productivity.
- ☞ The Contractors should consider business environment risk in their cost estimation in order to overcome delay because of cash flow of project.

Recommendations for Client

- ☞ The client should ensure that funds are available with adequate cash flow plan before projects are commenced.
- ☞ The client should facilitate timely payment to contractors in order to overcome delay, claims and disputes in the project period.
- ☞ The client should jointly work with regulatory bodies and professionals to minimize effects of using building under construction project while maximizing profitability.

Recommendations for regulatory bodies

- ☞ Generally, most significant influencing factors were related to project consultant therefore in any building construction projects the concerned body basically regulatory bodies should Ensure the involvement of consultant in any building project
- ☞ The regulatory bodies should filter the legal requirements that must be fulfilled for using a building under construction.
- ☞ The regulatory bodies should be involved from the beginning of the project until the project is completed.
- ☞ The regulatory bodies should Enhance the capacity of city construction design and supervision department that specifically follow buildings under construction.

Recommendations for End Users

- ☞ The End Users (Banks and merchants) Should enforce the owner and contractor to accelerate the building project before the stipulated project duration rather than exposing themselves and their customers to the risk since construction is risk sensitive by its nature.
- ☞ The End Users Should be aware that use of building under construction can decrease their organizational performance.

Recommendations for researchers:

- ☞ Assessing the legal criteria for permit and follow up system to use building construction and /or to use building under construction under PPA (2011), MDB FIDIC (2010) and Applicable Law.
- ☞ Assessing the risk sharing mechanism of using building under construction between stakeholders as well as end user.

REFERENCES

Abadir, H. (2011). *Project Management Maturity in the Construction Industry of Developing Countries: The Case of Ethiopian Contractors.* University of Maryland, College Park: Master's thesis.

Abdelnaser Omran, M. A. (2012). An Evaluation of The Critical Success Factors For Construction Projects In Libya. . *Journals Of Economic Behavior, 2*, 17-25.

Babu, S. S., & Sudhakar. (2015). Critical Success Factors Influencing Performance Of Construction Projects. *International Journal Of Innovative Research In Science ,Engineering And Technology*, *4*(5), 3285-3292.

Belout, A., & Gauvereau, C. (2003). Factors influencing project success: the impact of human resource management. *International Journal of Project Management, 22*, 72-84.

Cheuk, F. (2000). Effects Of Building Construction Noise On Residents: A Quasi-Experiment. *Journal of Environmental Psychology (2000) 20, 375-385*, 375-385.

Coble, R. J. (1999). Research and Innovation in Building and Construction (CIB) Working Commission W99. *In International., P. O. T. N. (Ed.) Conference of International Council* .

Didenko, I. (2008). *Success Factors In Construction Projects: A Study Of Housing Projects In Ukraine.* Ukraine:: Ukraine: Umeå University.

Eden, H. (2016). *Investigation on the Factors Affecting Construction Materials Wastage on Building Projects in Jimma Town.* Jimma: Master's Thesis.

Ethiopian building proclamation No.624. (2009). Ethiopian building proclamation . *Ethiopian building proclamation No.624/2009* .

Getaneh, G. (2011). *Assessment of Conditions of Contract Problems in Ethiopian Construction Industry*. Addis Abeba: Master's Thesis AAU.

Handbook. (2010). *Improving Construction Efficiency and Productivity with Modular Construction* (Vol. 6). McGraw Hill: ModularBuildingInstitute.

Hoe, E. Y. (2013). *Causes of Abandond Construction Projects in Mayesia.* Master Thesis, Surveying.

Ika, L. A., Diallo, A., & & Thuillie, D. (2012). Critical Success Factors For World Bank Projects: An Empirical Investigation. *International Journal Of Project Management*, 105–116.

Jekale, W. (2004). Performance for public construction projects in developing countries: Federal road and educational building projects in Ethiopia. *Norwegian University of Science & Technology*.

Jekale, W. (2005). Development of Construction Industry in Ethiopia. *EACE Journal, 4*(1).

Jose L Fernandez Solis. (2008). The systemic nature of the construction industry Architectural Engineering And Design Management. *Research Gate; Volume 4*, 31- 46.

Karhu, V. K. (1997). *Construction process model. Generic present-state systematization by IDEF0. Espoo. , .* Finland: Technical Research Centre of Finland VTT Tiedotteita-Meddelanden-Research Notes .

Kerzner, H. (2001). *Project Management: A Systems Approach to Planning,Scheduling and Controlling. 7th ed. .* New York.

Kristen, E. M., & Parrish, a. (2016). Investigating Building Construction Process and Developing a Performance Index. *by Elsevier Ltd* (pp. 211 – 218). Elsevier Ltd.

Lemlem, T. (2016). *An assessment of Building Construction Efficiency: A Case Study in Addis Ababa.* Addis Ababa.

Leonas, U. (2004). Deterination of efficiency of investments in construction. *International Journal of Strategic Property Management 8(1)*, 25-43.

Levy, S. (2012). Project Management in Construction;. *McGraw-Hill*, 478.

Mamaru, D., Esayas, A., & Sintayehu, A. (2016). Investigation of Major Success Factors on Building Construction: The Case of Bole Sub City, Addis Ababa. Jimma, Ethiopia: JIT Master Thesis.

Manaye, M. (2017). *Assessment of Risk and Safety Management on Building Construction Project in Case of Jimma.* Jimma: Master's Thesis.

McCray, G., & Purvis, R. (2002). Project management under uncertainty: The impact of heuristics and biases. *Project Management Journal*(33), 49–57.

Mills, A. (2001). A systematic approach to risk management for construction. *Structural Survey*, 245-252.

Modular Institute Building. (2010). *Modular Building Institute.*

MoWUD Report. (2006). *A plan for accelerated and sustainable development to end poverty (PASDEP).* Addis Ababa: Ministry of Works and Urban Development.

OECD, C. (2008). *Competition In The Construction Industry.* Competition Policy Roundtables.

Ofori, G. (2000). Challenges of construction industries in developing countries. *Proceedings of the 2nd international conference of the CIB TG29 on Construction in Developing Countries.* Gaborone, Botswana.

Ofori, G. (2000). Globalization and construction industry development: research opportunities. *Construction Management and Economics*(18), 257-262.

Pakseresht, A. A. (2012). Determining The Critical Success Factors In Construction Projects: Ahp Approach. *Interdisciplinary Journal Of Contemporary Research In Business*, 383-393.

PMIBook. (2008). *Guide to the project management body of knowledge (PMBOK® Guide). 4th ed. Newtown Square.* Project Management Institute.

Ricardo Antunes and Vicente Gonzalez . (2015). A Production Model for Construction; A Theoretical Framework . *Buildings journal New Zealand* , 209-228.

Salleh, R. (2009). *Critical Success Factors Of Project Management For Brunei Construction Projects:Improving Project Performance.* Queensland: School Of Urban Development.

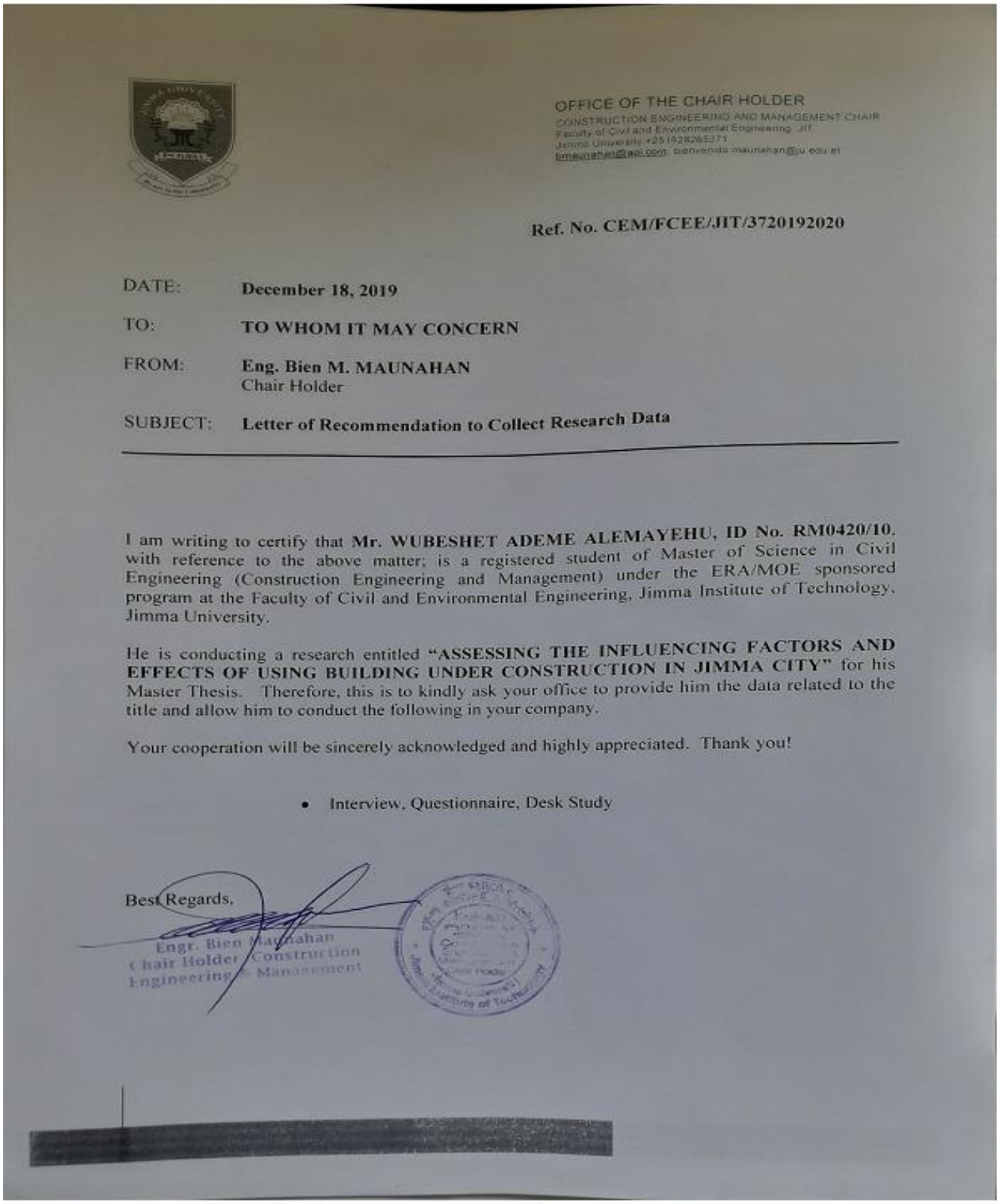
Sanvido V, Grobler F, & K Parfitt. (1992). Critical Success Factors for Construction Projects. *Journal Constr. Eng. Manage, 118*(1), 94-111.

Star, T. (2009a). *Penang trying to solve abandoned project issue.* The Star Online. Retrieved December 20, 2009.

Westland's Skye Development. (2015). *Proposed construction of modern mixed use commercial office/hotel complex on Muthithi road- Westland's, - EIA Study Report.* Nairobi, Kenya: Westland's Skye Development limeted.

WorldBankReport. (2007). *Construction Industry.*

PPENDIX A: LETTER OF RECOMMENDATION TO COLLECT DATA



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CONSTRUCTION ENGINEERING AND MANAGEMENT CHAIR
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Ref. No. CEM/FCEE/JIT/3720192020

DATE: December 18, 2019

TO: TO WHOM IT MAY CONCERN

FROM: Eng. Bien M. MAUNAHAN
Chair Holder

SUBJECT: Letter of Recommendation to Collect Research Data

I am writing to certify that Mr. WUBESHET ADEME ALEMAYEHU, ID No. RM0420/10, with reference to the above matter; is a registered student of Master of Science in Civil Engineering (Construction Engineering and Management) under the ERA/MOE sponsored program at the Faculty of Civil and Environmental Engineering, Jimma Institute of Technology, Jimma University.

He is conducting a research entitled "ASSESSING THE INFLUENCING FACTORS AND EFFECTS OF USING BUILDING UNDER CONSTRUCTION IN JIMMA CITY" for his Master Thesis. Therefore, this is to kindly ask your office to provide him the data related to the title and allow him to conduct the following in your company.

Your cooperation will be sincerely acknowledged and highly appreciated. Thank you!

- Interview, Questionnaire, Desk Study

Best Regards,

Engr. Bien Maunahan
Chair Holder Construction
Engineering & Management

APPENDIX B: QUESTIONNAIRES SURVEY

JIMMA UNIVERSITY

JIMMA INSTITUTION OF TECHNOLOGY

SCHOOL OF GRADUATE STUDIES

FACULTY OF CIVIL AND ENVIRONMENTAL ENGINEERING

CONSTRUCTION ENGINEERING AND MANAGEMENT CHAIR

Date: _____

Dear Respondents

The questionnaire, attached with this letter, is designed to study a title "ASSESSMENT OF THE INFLUENCING FACTORS AND EFFECTS OF USING BUILDING UNDER CONSTRUCTION IN JIMMA CITY" as part in Partial Fulfillment of the Requirement for the Degree of Masters of Science in Construction Engineering and Management.

The information you provide will help to better understand those aspects and enhance the Building construction industry in Jimma. Hence, we kindly request you to respond to the questions frankly and honestly.

Your response will be kept strictly confidential. It will be used for academic purpose and exclusively for the research only.

Thank you very much for your time and cooperation. We greatly appreciate your help in furthering this research end over and your timely response.

Yours faithfully,

Advisor: Eng. Bien Mercado Maunahan (Asst. Prof.)
Co-Advisor: Eng. Ahmed Nuredin Kelifa (MSc.)

Prospective Graduate Student: Wubshet Ademe Alemayehu

PART ONE – GENERAL INFORMATION

Please put (√) and/or fill in the blank space as appropriate

1. Please specify your type of organization:

   ○ Contractor ○ Consultant ○ Client ○ Other

2. Category and class of company (GC# / BC#) please specify (for consultant and contractor): _____

3. Respondents designation(position) in the company:

   ☐ Project manager ☐ Site Engineer ☐ Office Engineer

   ☐ Supervisor ☐ Owner Representative

   ☐ If Other, please specify _____

4. What is your(Respondents) field of specialization?

   ☐ Civil Engineering ☐ Surveying Engineering

   ☐ Construction technology and management ☐ No Engineering background

   ☐ If Other, please specify _____

5. Relevant working experience in the building construction sector: (In Years).

   ☐ 0 – 5 ☐ 6 – 10 ☐ 11 – 15 ☐ More than 15

6. How many building projects have you been involved including current project which are highly risky of operate two phases at once (Construction phase and operation Phase)?

   ☐ Less than 5 projects ☐ 6-10 projects ☐ More than 10 projects

7. Is there building under-construction are open to the service in the Jimma city? A) Yes B) No
   If "Yes" Is it a problem to use the building under construction or open to the service? A) Yes B) No

PART 2 – INFLUENCING FACTORS OF USING BUILDING UNDER CONSTRUCTION PROJECTS IN JIMMA CITY.

Lists of influencing factors of using buildings under construction for the study are mentioned below. From your experience in the sector, please tick the appropriate cell by indicating how much you rate to listed factors that influence to use buildings under construction in Jimma City, Oromia region, Ethiopia. (Please indicate your opinion by checking (✓) and/ or encircle in the 1 to 5 Rating scale.)

Agreement: 1-very Low 2- Low, 3- Average, 4- High and 5-Very High

S. No	Category of factors	Influencing factors	Rating Scale				
			1*	2	3	4	5
1	Cost Related Factors	Funding problems or client's shortage of finance	1	2	3	4	5
2		Cost under estimation	1	2	3	4	5
3		Decrease of labour productivity while increase their wage	1	2	3	4	5
4		Increase of consultancy service fees	1	2	3	4	5
5		Inflation or increase in the cost of construction materials	1	2	3	4	5
6		Inadequate financial planning	1	2	3	4	5
7		Absence of construction-cost data	1	2	3	4	5
8		Number of construction going on at same time	1	2	3	4	5
9		Economic stability	1	2	3	4	5
10		Previous experience of the contract	1	2	3	4	5
11		Frequent design change & lack of coordination b/n designers &contractors	1	2	3	4	5
	If , other please specify						
1	Time Related Factors	Poor qualification of consultants, engineers and staff assigned to the project	1	2	3	4	5
2		Poor planning and scheduling of the project by the contractor	1	2	3	4	5
3		Severe weather conditions on the job site	1	2	3	4	5
4		Shortage of skilled &technical professionals in the contractor's organization	1	2	3	4	5
5		Poor coordination by the consultant's engineers with the parties involved	1	2	3	4	5
6		Improper handling of the project progress by the contractor	1	2	3	4	5
7		Executive bureaucracy in the client's organization	1	2	3	4	5
8		Less number of Personnel and staff for supervision	1	2	3	4	5
9		Decrease productivity of workforce	1	2	3	4	5
	If , other please specify						

1	**Risk Related Factors**	Less consideration of excepted risks and Indemnities that the Client has contractually undertaken to be assume.	1	2	3	4	5
2		Non-Involvement of consultant for design and Supervision & tender document preparation	1	2	3	4	5
3		Different consultant for design and Supervision	1	2	3	4	5
4		Unable to forecast potential risks (Quantify them)	1	2	3	4	5
5		Less Experience and ability of contractor on risk assessing, controlling and taking	1	2	3	4	5
6		Having effective health and safety program (contractor)	1	2	3	4	5
7		Unclear Legal restricting in obtaining occupancy permits and controlling mechanism	1	2	3	4	5
8		Unexpected weather condition	1	2	3	4	5
9		Need of work	1	2	3	4	5
	If , other please specify						
1	**Material Related factors**	Suitability of material storage on site	1	2	3	4	5
2		High control of material on site	1	2	3	4	5
3		Non-Availability of resources	1	2	3	4	5
	If , other please specify						
1	**Skilled Manpower And Labor Related Factors**	The level of management control	1	2	3	4	5
2		Professionalism of the design team	1	2	3	4	5
3		Difficulties in employing site supervisor	1	2	3	4	5
4		Incompetence of site supervisor	1	2	3	4	5
5		Late inspection of completed work	1	2	3	4	5
6		Turnover and Absenteeism (Labor)	1	2	3	4	5
7		Disturbance, Communication problems and Frequent changes in labors	1	2	3	4	5
1	**Regulatory Bodies related factors**	Concepts for urban development are not transparent and retraceable	1	2	3	4	5
2		There are not enough qualified construction professionals to fulfil the demands of the market	1	2	3	4	5
3		Unclear Legal restricting in obtaining occupancy permits and controlling mechanism	1	2	3	4	5
4		Bribery /Corruption	1	2	3	4	5
5		Political influences	1	2	3	4	5
6		Less number of Personnel and staff for supervision					
	If , other please specify						

1	**End User Related Factors**	Attractive pressure on owner by increase source of revenue for the owner/client of the building	1	2	3	4	5
2		Source of income for government in the form of taxation	1	2	3	4	5
3		Source of revenue for the organization use the building	1	2	3	4	5
4		Source of revenue for the employee of the organization	1	2	3	4	5
5		Solving the scarcity of commercial center in the city and or needs of building	1	2	3	4	5
6		Decreasing unemployment rate	1	2	3	4	5
	If , other please specify						

PART 3 –EFFECTS OF USING BUILDING UNDER CONSTRUCTION PROJECTS IN JIMMA CITY.

Lists of effects of using buildings under construction for the study are mentioned below. From your experience in the sector, please tick the appropriate cell by indicating how much you rate to listed of effects of using buildings under construction in Jimma City, Oromia region, Ethiopia. Please indicate your opinion by checking (✓) and/ or encircle in the 1 to 5 Rating scale.

Agreement: 1-very Low 2- Low, 3- Average, 4- High and 5-Very High

S. No.	Effects of Using Buildings Under Construction		Rating Scale				
			1	2	3	4	5
	Social effects of using building under construction						
1	**Social Effects**	Increase the rate of accident onsite (Falling object (blocks, bricks, debris) heating head body including feet of occupant or user)	1	2	3	4	5
2		Decrease design life of the building	1	2	3	4	5
3		Increase traffic flow	1	2	3	4	5
4		Air pollution Dust (mortal/ cement) (Inhalation of dust from cement cancer, respiratory system)	1	2	3	4	5
5		High noise generation (E.g. block/brick cutting machine)	1	2	3	4	5
6		Increase pressure on utilities/ services	1	2	3	4	5
7		Divert the culture of construction not only local but also foreign participates of the industry	1	2	3	4	5
	If other, please specify						

	Economic effects of using building under construction		1	2	3	4	5
1	Economic Effects	Overcrowded site so difficult to manage materials on site and Material on site are exposed to theft lead to additional cost	1	2	3	4	5
2		Delay of the project because of decrease the productivity of workforce onsite	1	2	3	4	5
3		Decrease the productivity of employee of organizations because of disturbance on site	1	2	3	4	5
4		High maintenance cost because of early open to service	1	2	3	4	5
5		High cost of accident on work force of the industry plus public who uses the service	1	2	3	4	5
6		Special care are needed over conventional construction system (Scaffolding) and Needs high cost for health and safety in special way	1	2	3	4	5
7		May lead to total failure of structures	1	2	3	4	5
	If other, please specify						

From your experience in the sector, please tick the appropriate cell by indicating how much you rate to listed of the major effects of using buildings under construction in Jimma City, Oromia region, Ethiopia.

1-very Low 2- Low, 3- Average, 4- High and 5-Very High

No	Major Effects of Using Buildings Under Construction	Rating Scale				
		1	2	3	4	5
1	Cost overrun	1	2	3	4	5
2	Time overrun	1	2	3	4	5
3	Risk	1	2	3	4	5
4	Loss of quality	1	2	3	4	5
5	Dispute	1	2	3	4	5

Thank you!!!!!!!!!!!!!!!!

APPENDIX C: INTERVIEW

Project Name: _____
Name of the organization: _____
Respondent's Name (optional): _____
Position/role: _____
Date and time: _____
The interviewee is the member of the organizations and previously involved or still involved in the project.

Introduction

Good morning/Good afternoon Mr./Ms. (Name of respondent) my name is Wubshet Ademe. Before starting my question, I would like to thank you for your volunteer participation in this research. The interview will be divided into two sections and will last approximately 30 to 40 minutes.

This semi closed interview which is forwarded to the client, contractor, consultants or regulatory bodies and organizations who use the building is part of academic research that aims to investigate the influencing factors and effects of using building under construction in Jimma City. With this survey, I would like to investigate influencing factors and effects of using building under construction in order to improve the building construction delivery process. In the long term this research helps the contract parties to complete project on time, within budget desired quality and less risk. All information you provide will kept in strict confidentially and only used for academic research. Please feel free to answer the questions with what you know and what you think in your mind. I value your participation and thank you for the commitment of time, energy and effort.

INTERVIEW QUESTIONERS FOR ORGANIZATIONS

1. What is your role in the organizations?
2. How would you rate the overall performance of your organization compared to other branch or other organization which are open their service under the finished building construction projects?

   ☐ Excellent ☐ Good ☐ Fair ☐ Poor
3. In your opinion, who should be responsible for the accident during construction on site on the employee and on the public who uses the building? Workers, Contractors, Owners, Consultant, Government, or Insurance company or who? How they shire the accident?
4. What are the influencing factors leads your organization to open the service in the building which is under construction? Is it the Lack of Legislation, Lack of Safety Knowledge, government Management Carelessness, Careless worker attitudes, Carelessness of the Consulting, Carelessness of the client, Carelessness of the Consulting, Carelessness of your organization or what is the reason?

APPENDIX D: SAMPLE of PHOTO GALLERY


Dashen Bank
TOYOTA