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PAYMENT ISSUES: THE CASE OF SELECTED PUBLIC BUILDING CONSTRUCTION PROJECTS IN ADDIS ABABA

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DECLARATION

I, the undersigned, declare that this thesis, entitled '***Payment issues; the case of selected public building construction projects in Addis Ababa***', is my original work and it hasn't been presented for a masters or any other degree in this or any other university, and all sources of materials used for the thesis are duly acknowledged.

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This thesis is conducted under my supervision and submitted to the school for examination with my approval.

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Payment issues: The case of selected public building construction projects in Addis Ababa

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ABSTRACT

Proper payment in a construction contract is very essential and it is one of the major factors that determine the fate of a construction project; whether to be successful or not. The thesis is mainly interested in identifying the major payment problems, their causes and consequences in public building construction projects that are being undertaken in the city of Addis Ababa, starting from the year of 2001 to 2004 E.C. Payment problems in the construction industry may differ from delayed payments to partial certification/under certification of payments and none payment of sums due. The research identified which of those problems are there in the public building construction projects, along with their causes and the consequences they had on the projects, using questionnaire as a main data collection instrument and informal interviews which were carried out with different professionals among the respondents of the questionnaire. Accordingly, payment delay and partial payment are identified to be the major problems. The employer's bureaucratic payment system, the consultants' bias towards the employer and the contractors' poor progress in their works are found to be the main causes of the problems. Delay in project completion time and cost overrun are found to be the major consequences of the problems.

Key words; Construction payment, payment delay, partial payment, payment system, work progress, payment certification, project success.

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CHAPTER ONE

1. INTRODUCTION

1.1. BACKGROUND OF THE RESEARCH

Construction projects except those with very limited duration have contract provisions that allow the contractor to apply for partial payments as the project progresses. Otherwise, the contractor would have to fund the entire project with borrowed funds or from its own equity; with either of these methods, the owner would ultimately pay the finance costs through their inclusion in the lump-sum price, the various unit prices or the fee charged in a cost-plus contract. The basis for payment depends upon the type of contract. In every case, some sort of measurement is carried out to assess the amount of work completed. It is common practice to prepare payment requests every month. If the project is being constructed under a measure-and-value (unit-price) contract, careful measures of each pay item must be made as the work is installed [Bennett, 2003].

The contractor is entitled to be paid the pre-agreed price for the work and once the agreement is signed, no matter the price is reasonable or not either party is obliged to accept it. A contractor who tendered with a price that is unprofitable is still bound to complete the work for that price and similarly, if the employer finds that the price he has agreed to pay is too high, he cannot vary the contract to take work out and give it to a contractor whose price is lower.

The ultimate goal of every construction project is to be completed on time with the estimated budget achieving the required quality and finally to be used for the specified purpose. For this, to be true, parties in a contract should do things according to the contract document. The employer has to finance his projects continuously up to the completion, as far as the contractor is working according to the drawing and specification and in accordance with the conditions of contract. This is because most of the local contractors rely on the money that is financed by the employer on interim bases. Therefore stoppage, delay or any kind of interruption to this financing means the total standstill of the whole work or a very slow progress with poor quality which may arise because of so many reasons. Besides all, for the work to be successful, it needs an effective contract administration.

1.2. STATEMENT OF THE PROBLEM

Proper construction payment is one of the major factors for any construction project to become a reality in a successful manner. Whereas, failure to finance one's own construction project promptly and in accordance with contract conditions and agreements will obviously lead to unsuccessful project and this will be reflected by delay of those projects, cost overrun and poor quality works. Based on the researcher's observation and consultation of experienced professionals who know the practice in the country very well, problems in relation to payment are found to be very common in many public building construction projects in Addis Ababa. Whereas, they are not clearly identified yet, including what causes them and what consequences do they have on the projects. The problem needs to be given a due attention and appropriate solution must be devised, otherwise it can cause lots of damage to a public property up on which millions of money and resources are being invested. The problem can cause even more damages in the coming future considering the fact that public building construction works in the city are increasing both in number and size time to time. As a result, I have decided to conduct my thesis in this area believing in that I can give insight to everyone working in the specified projects as well as in the construction industry, and contribute my part in solving the problem.

1.3. OBJECTIVE OF THE STUDY

The objective of the research is to identify the major payment problems in public building construction projects in Addis Ababa and, to find out the major causes and consequences of the problems on the projects.

1.4. RESEARCH QUESTIONS

The research is conducted based on the following questions and each of them is addressed throughout the research process.

- What construction payment problems are there in public building projects in Addis Ababa?
- What are the causes of construction payment problems in public building projects in Addis Ababa?

- What are the consequences of construction payment problems in public building projects in Addis Ababa?

1.5. SIGNIFICANCE OF THE STUDY

The study has identified what major payment problems are there in public building construction projects in Addis Ababa and it has also investigated the main causes and consequences of the problems. Therefore, the findings of this research will enhance the awareness of the three main parties (employer, contractor and consultant) of a contract and other professionals in the construction industry, about construction payment problems that are common in public building construction projects in Addis Ababa. It will also provide the parties with a better understanding of the causes and consequences of the problems on the projects and will assist them in dealing with the problems associated with construction payment which again leads to improved working relationship between them.

1.6. SCOPE OF THE STUDY

The research is entitled as ***Payment issues; the case of public building construction projects in Addis Ababa,*** and for the purpose of this research the term **payment issues,** includes construction payment matters in relation to interim payment. The list of projects is obtained from government construction agency and housing projects offices of Addis Ababa and it is a collection of housing, office, educational and health center buildings in the city. Therefore, the scope of the research is limited to the public building construction projects up on which the study is conducted only and the results obtained do not necessarily represent projects that are not under the control of the two offices mentioned above.

1.7. METHODOLOGY AND RESEARCH PROCESS

The study has begun with a detailed literature review which was very helpful in understanding, identifying and categorizing construction payment related issues that commonly exist in the construction industry. The literature review was used as a method of identifying the different payment issues; the major payment problems, the possible factors that cause payment problems and

effects of these problems on a construction project and the contracting parties as well. It was also used as a mechanism for identifying good practices in the developed world so that it will be very helpful to examine the local practice.

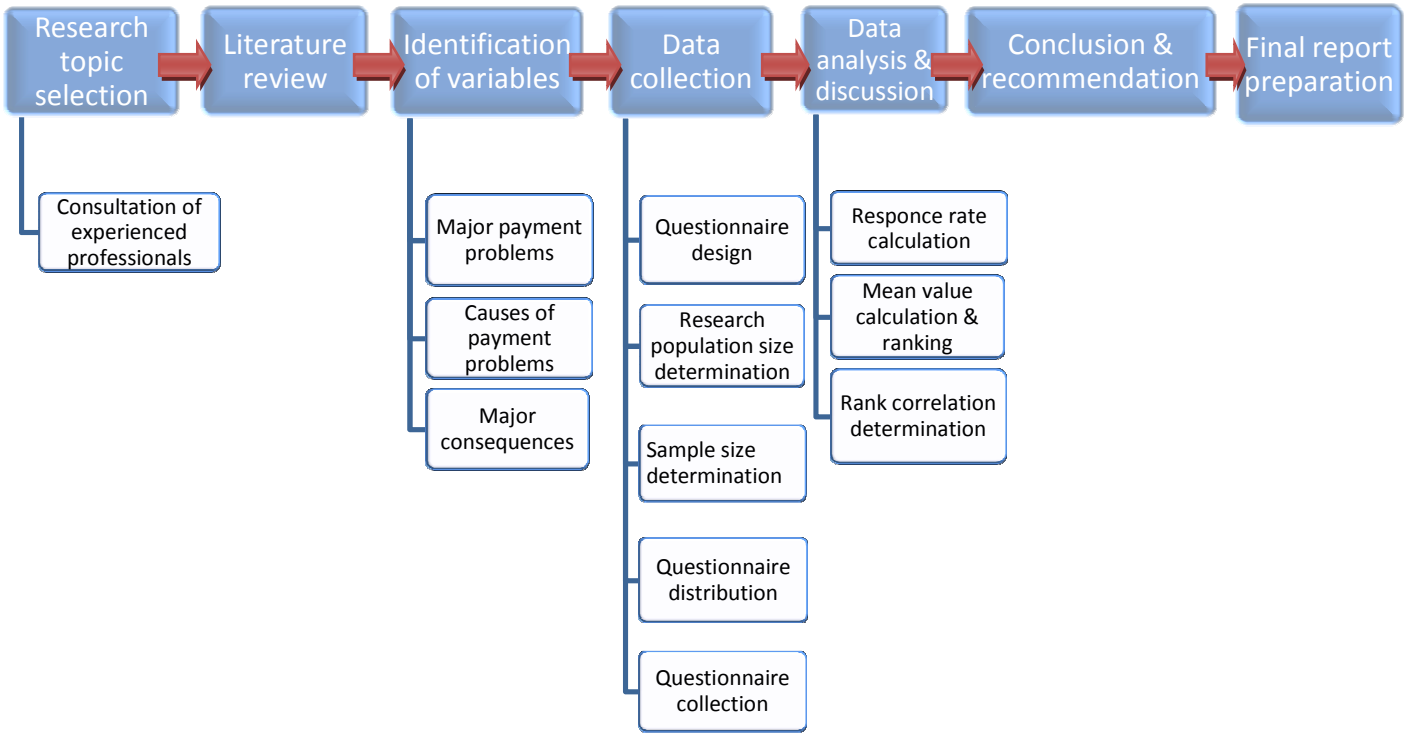
Following the identification of the different payment issues through a detailed literature review, questionnaire was designed to collect opinions of the different bodies in the construction contract. The questionnaire was distributed to the representatives of the three major target groups (the client, contractor and consultant) who are directly involving in a particular project on site level.

The questionnaire has three different parts; the first part deals with the general information of the firm and the individual who gives response to the questionnaire. This part is included in the questionnaire in order to get sufficient information about the organization and the respondent's profile. The second part of the questionnaire attempts to get basic information about the research topic and it begins by identifying whether construction payment is an issue in public building construction projects in Addis Ababa or not. In this part of the questionnaire it is also tried to investigate what other payment problems really exist in the public building construction projects in Addis Ababa, by asking the respondents to mention the payment problems that they faced in their experience. In addition to this it was also attempted to investigate what different things are done by respondents who might not have faced payment related problems and believe that it is not an issue in public building construction projects in Addis Ababa.

The third part of the questionnaire is the structured part and it deals with the payment issues identified and grouped by the researcher in a manner that will be suitable for the study. In this part the researcher categorized the payment issues in three different groups. These are: major construction payment problems, cause of construction payment problems and consequences of those payment problems. For each of the payment issues the researcher has identified different statements from the detailed literature review carried out prior to designing the questionnaire. In this section of the questionnaire respondents were asked to show their level of agreement by giving rating to those statements based on their frequency of occurrence in public building construction projects in Addis Ababa by using the five point Likert scale provided on the right top corner of the questionnaire (please refer appendix A).

Based on the responses collected from the respondents the research continued on to the investigation of the severity of the major payment problems identified from literature survey. After identifying the severity of the problems; contributing factors and consequences of those problems were identified and ranked based on the rating given by the respondents. In addition to the questionnaire informal interviews were held with different individuals in each target group and it was very helpful in understanding the major payment problems that are common in public building construction projects. After the accomplishment of the above stated tasks the research continued on analyzing and interpreting results, and drawing conclusions and recommendations based on the results obtained from the study. Figure 1 below, illustrates the research process further.

Figure 1: *The research process*



CHAPTER TWO

2. LITERATURE REVIEW

2.1. CONSTRUCTION CONTRACTS

2.1.1. Definition of contract

Different authors have defined a contract in different statements that most likely will have similar meaning. In this study, four different definitions of contract are incorporated including the definition given in the civil code of Ethiopia. Article 1675 of the civil code of Ethiopia defines a contract as, "a contract is an agreement whereby two or more persons as between themselves create, vary or extinguish obligations of a proprietary nature."

According to Barry Benator & Albert Thumann (2003), a contract is a mutual business agreement recognized by law under which one party undertakes to do work or provide a service for another party for a "consideration."

Bunni Nael G. (2005) defined a contract as it is 'a promise enforceable by law'. He also added that a slightly more elaborate definition is 'an agreement between two or more parties in which each party binds himself to do or forbear to do some act and each acquires the right to what the other promises'.

Alan C. Twort and J. Gordon Rees (2004) elaborated a construction contract as it is an agreement between two parties which they intend it to be legally binding with respect to the obligations of each party to the other and their liabilities. The contract thus binds the contractor to construct the works as defined, and the employer to pay for them in the manner and timing set out.

Based on the above definitions we can understand that a contract will bind the employer and the contractor by setting duties and responsibilities to both of them and these duties and responsibilities are expected to be performed without any breach from either party. Thus in the contract, the contractor is mainly obliged to construct the works as per the drawing and specifications defined,

while the employer is obliged to pay for the work executed and certified by the engineer following the procedure and time limit set out in the contract.

2.1.2. Elements of a contract

According to Nunnally S.W. (2007) the legally essential elements of a constraction contact includes;

- An offer
- An acceptance
- A consideration (pament for services to provide)

The offer is normally a bid or a proposal submitted by the contractor to build a certain facility according to the plans, specifications, and conditions set forth by the owner. ***Acceptance*** takes the form of a notice of award and ***consideration*** usually takes the form of payment, but it may legally be any thing of value.

Thomas E Uher and Davenport Philip (2002) also stated that seven elements are generally regarded as essential to the validity of a contract:

- There must be an intention to create a legal relationship.
- There must be offer and acceptance.
- There must be valuable consideration.
- The parties must have legal capacity to contract.
- There must be a genuine consent by the parties.
- The legality of the object of the agreement must be ensured.
- The terms of the contract must be sufficiently certain.

2.1.3. The contract document

A construction contract is an agreement to construct a definite project in accordance with plans and specifications for an agreed sum and to complete it, ready for use and occupancy, within a certain time. Although contracts may be expressed or implied, oral or written, agreements between owners and contractors are almost universally reduced to writing. Their forms may vary from the simple acceptance of an offer to the usual fully documented contracts in which the complete plans,

specifications, and other instruments used in bidding, including the contractor's proposal, are made a part of the contract by reference.

A written contract, according to Barry Benator & Albert Thumann (2003), provides the document by which the risks, obligations, and relationships of all parties are clearly established, and ensures the performance of these elements in a disciplined manner.

As civil engineering works are often complex, involving the contractor in many hundreds of different operations using many different materials and manufactured items, including employment of a wide variety of specialists, the documents defining the contract are complex and comprehensive. The task of preparing them for tendering therefore warrants close attention to detail and uniformity of approach, so as to achieve a coherent set of documents which forms an unambiguous and manageable contract.

For the employer a contract is the means by which he controls the contractor and ensures that the work and the end product satisfy his requirements whereas for the contactor it can be a guide by which he executes the work and gets paid for it.

Alan C. Twort and J. Gordon Rees (2004) justified that a typical set of documents prepared for tendering will include;

- Instructions to tenderers
- General and particular conditions of contract
- The specification
- Bill of quantities or schedule of prices
- The contract drawings
- Tender and appendices

(i) **Instructions to tenderers**

These tell the contractor where and when he must deliver his tender and what matters he must fill in to provide information on guarantees, bond, proposed methods for construction, etc. The instructions may also inform him of items which will be supplied by the employer, and sources of materials he should use like, source of filling for earthworks construction etc.

(ii) **General and particular conditions of contract**

The general conditions of contract may comprise any of the 'standard' forms of contract. The particular conditions adopted may contain amendments or additions that the employer wishes to make to the standard conditions. Usually the standard conditions are not reproduced in the tender documents but they will be named by specific reference and a schedule will show what changes have been made to them.

(iii) **The specification**

This describes in words the works required, the quality of materials and workmanship to be used, and methods of testing to be adopted to ensure compliance. The specification usually starts with a description of the works to be constructed, followed by all relevant data concerning the site, access, past records of weather, etc. and availability of various services such as water supply, electric power, etc.

(iv) **Bill of quantities or schedule of prices**

These form an itemized list covering the works to be constructed, against each item of which the tenderer has to quote a price. A bill of quantities shows the number or quantity of each item and its unit of measure, the rate per unit of quantity quoted by the tenderer, and the consequent total price for that item. This permits re-measurement according to the actual quantity done under each item. Some bills contain many hundreds of items, classified by trade or according to a standard method of measurement. A schedule of prices may comprise a series of lump sums or it may call for rates only, but can list provisional quantities which are estimated, that is, uncertain.

(v) **Tender and appendices**

The tender sets out the formal wording which comprises the tenderer's offer to undertake the contract, the tenderer having to enter the sum price he offers. The appendices to tender will contain other matters defining the contract terms and which the tenderer confirms he accepts in making his offer, such as time for completion of the works, damages for failure to complete on time, minimum amount of insurances, completion of bond, etc. There may be other matters concerning the basis of his offer he is required to supply, such as currency exchange rates (for international contracts) or sources of materials.

(vi) **The contract drawings**

These should provide as a complete picture as possible of all the works to be built. The more complete the contract drawings are, the more accurately the contractor can price the work, and the less likelihood there is that variations and extra payments will be necessary. However, it is not necessary at tender stage to provide every detailed drawing that will ultimately be required (such as all concrete reinforcement drawings) so long as the contract drawings provided to tenderers show quite clearly what is required. On small jobs all the foregoing documents may be combined in one volume; but on most jobs at least two and sometimes three or more volumes will be necessary. A tenderer is usually sent a second copy of the instructions to tenderers, bill of quantities, tender and appendices, so that he can keep one copy of what he has bid.

2.2. THE ROLE OF THE MAIN PARTICIPANTS IN CONTRACTS

2.2.1 Introduction

A construction contract is made between two parties these are; 'the employer' and 'the contractor'. Their roles are defined in the contract. However, because there is a need for day-to-day supervision of civil engineering construction works, the two parties may agree that a third person should carry out such duties. This third person can have varying powers under the contract and this is reflected in his designation.

According to Barry Benator & Albert Thumann (2003), the normal contractual relationship among these three parties on a single project is for the owner to have one contract with the engineer for design,

procurement, and other services, and a separate contract with the contractor for the construction work. No contractual relationship exists between the engineer and the contractor. This is usually referred to as a "divided or split responsibility" arrangement. In an alternative arrangement, called "single responsibility," a general contractor is awarded total responsibility for the engineering, procurement, and construction.

2.2.2 Role of the employer

The "employer" as defined in the public procurement agency (PPA) condition of contract, is the party who employs the contractor to carry out the works and means "procuring entity".

Alan C. Twort and J. Gordon Rees (2004) justified that the employer is the party who initiates the process of acquiring the works. He sets down what he requires and specifies this in the tender documents, which he issues to firms of contractors to seek their offers to carry out the works. His obligations include ensuring that the works are legally acceptable and practical, and that the site for them is freely available. He may also need to arrange that associated needs, such as the supply of power, drainage and the like which he is providing, are available. Having set up these basic elements he must, above all, ensure that he can meet his obligation to pay the contractor in accordance with the contract.

The delay of the owner or the engineer in processing and making timely payments imposes hardships and improper financial burdens on the contractor who is in charge of constructing the proposed project. In order to avoid such problems, all payments should be made promptly. This should include payment for all labor, services and materials stored on the job site. This applies to both progress payments and final payments.

In the event of the employer's failure to make payments to the contractor within the stated time after the engineer has issued an interim payment certificate, the employer is required to pay interest at a rate specified in the condition of contract. The interest is applied to all sums unpaid from the date by which they should have been paid. This is stated in the PPA condition of contract sub clause 43.1 as "…the employer shall pay the contractor the amounts certified by the engineer within 30 days of the date of each certificate. If the employer makes a late payment, the contractor shall be

paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made."

The primary obligation upon the employer is to give the contractor the sum of money which forms the consideration for the contract. Money must be paid promptly and fully unless there are specific reasons for withholding it.

2.2.3 Role of the contractor

The contractor is the party with which the client or owner signs a contract for the performance of all the work and delivery of the finished project within a specific period of time and usually without exceeding estimated cost. To do this, the contractor will supply forces to the site in order to perform all of the work or he may subcontract part of the work to others but he is responsible for what happens to the work. The contractor is expected to mobilize and allocate all the necessary man power, materials, equipment etc… to achieve project completion in the shortest time and at the lowest cost.

Alan C. Twort and J. Gordon Rees (2004) stated that this is the party that takes on the obligation to construct the works. In his offer to the employer he puts himself forward as being able to build the works to the requirements set out in the tender documents. In order to do this he will have studied the documents and any geotechnical or other information provided or otherwise available, visited the site and checked the availability of such labour, plant and materials as may be needed. Once his offer is accepted and the contract is formed the contractor takes on the obligation of doing all and anything needed to complete the works in accordance with the contract, regardless of difficulties he may encounter. He is responsible for all work done by his sub-contractors and suppliers, and any design work the contract requires him to undertake.

According to Bunni Nael G. (2003), most if not all, construction contracts include an express or an implied undertaking by the contractor that, except in certain specified circumstances, he must complete the works and the project as a whole. All construction-related contracts are based on the

premise that liability for non-performance of contractual obligations is a strict one. Failure to perform the required duties under such a contract would give rise to a claim for damages.

Defective work, as identified by Thomas E Uher and Davenport Philip (2002), is any work, materials or workmanship that is not strictly in accordance with the requirements of the specification and drawings whether it is inferior to or better than the contract requires.

From the above definition we can understand that defective work is something which doesn't comply with the terms of the construction contract and the contractor should not include the amounts of defective works or works which are not completed to the satisfaction of the engineer in his payment requisition. This is because the employer may refuse to pay for such works because defective work has no value under the contract and it is not a work under the contract. In addition, the engineer itself may not be willing to certify on such a work and he is right to do so because he is there to control the quality of the work. Therefore, whenever there is a defect in a certain work the contractor should never include in his progress claims, any amount for the defective work.

2.2.4 Role of the engineer /consultant

The "engineer" under the PPA condition of contract, is the person named in the special conditions of contract (or any other competent person appointed by the employer and notified to the contractor, to act in replacement of the engineer) who is responsible for supervising the execution of the works and administering the contract.

Alan C. Twort and J. Gordon Rees (2004) justified that the engineer is not a party to the contract; but he is named in it with duties determined by the parties. Although he is appointed and paid by the employer, he has to supervise the construction of the works as an independent person, making sure they accord with the specified requirements. He also acts as an independent valuer of what should be paid to the contractor, and as a decider of issues arising in the course of construction. The engineer will normally be an experienced and qualified professional whose knowledge and standing should be sufficient to assure both employer and contractor that the decisions he makes are likely to be satisfactory, and given independently and impartially.

Under clause 60(5) of the MoWUD condition of contract it is stated that the engineer shall have power to withhold any certificate if the works or any part thereof are not being carried out to his satisfaction or to deduct the value of damaged materials, plant or equipment supplied by the employer to the contractor or the purposes of the works in the event of such damage being caused by the contractor's negligence or mishandling. But, the problem comes where money is clearly due to the contractor under the terms of the contract and an engineer wrongfully withholds a certificate of payment.

John Murdoch and Will Hughes (2000) justify that if the contract administrator refuses to certify at the appropriate time, or negligently under-certifies, this may well constitute a breach of contract on the employer's part. It certainly will do so if the contract administrator's conduct is due to positive interference by the employer. Such events will undoubtedly enable the contractor to claim damages, or possibly to recover what is due without the necessity of a certificate. Whether they will justify termination of the contract will once again depend on whether the breach is sufficiently serious to be regarded as repudiatory.

2.3. THE CONTRACT PRICE

According to John Murdoch and Will Hughes (2001) the price for the work is typically referred to as the contract sum, contract price or tender total. The importance of the price is emphasized by the extent to which contracts supply very specific definitions of what is included and how it can be changed. The contract price is defined in MoWUD standard condition clause1(h) as it means the sum named in the letter of acceptance, subject to such additions thereto or deductions there from.

2.3.1. Provisional sums & quantities

Clause 58(1) of the MoWUD condition of contract defines a provisional sum as provisional sum means a sum included in the contract and so designated in the bill of quantities for the execution of work or the supply of goods, materials, or services, or for contingencies, which sum may be used, in whole or in part, or not at all, at the direction and discretion of the engineer. The contract price shall include only such amounts in respect of the work, supply or services to which such provisional sums relate as the engineer shall approve or determine in accordance with this clause.

The final cost of a construction contract may be influenced by the quantities of work executed. A provisional sum is a nominated amount of money, usually estimated by the engineer's quantity surveyor, where the exact amount and cost of a specific work cannot be determined at the start of the contract. It is included in the original contract sum, but is monitored carefully, so that the sum can be adjusted as required.

The final adjusted contract sum will vary from the original contract sum when the expenditure against these items differs from that nominated in the contract document. Provisional sums and quantities should be kept to a minimum to minimize budget variations.

Thomas E Uher and Davenport Philip (2002) stated that the contractor is entitled to be paid the agreed price for the work. Whether that price is reasonable or not is irrelevant. The contract price is dealt with in different ways by different contracts. With bills of quantity, the bid by the contractor is based upon the work described and quantified in the contract bills. If any quantities are altered because of variations in the client's requirements, then the contract sum will be altered. Otherwise, the contractor is paid the amount of the tender.

There are numerous provisions within the contractual conditions to ensure that the contract is for the whole of the work specified. The simple fact that the money is actually paid in stages does not alter this. This is a theme followed through in the contracts by the fact that it is only the final certificate that is ever conclusive as to workmanship or quality of materials.

The contract sum may be changed for a variety of reasons; John Murdoch and Will Hughes (2001) divided them into three groups.

I. Reimbursement of the contractor for certain expense caused by the contract administrator, employer, or certain events outside the control of the contractor.
II. Payment for extra work brought about by a contract administrator's instruction.
III. Reimbursement of extra expense brought about by market fluctuations affecting the contractor's inputs.

2.4. TYPES OF CONTRACT AND METHODS OF PAYMENT

2.4.1. Re-measurement contracts

These type of contracts apply where MoWUD, PPA measurement contracts are used, incorporating a bill of quantities for pricing. Whenever additional work is required, the contractor is paid for it at bill rates and if different work is required, this is paid at similar or agreed rates.

According to Alan C. Twort and J. Gordon Rees (2004), the advantages are that the contractor can be paid fairly for the amount of work he has to do, and the employer only has to pay for work actually required, without having to pay a premium to the contractor for the risk of undertaking, at his own cost, extra work due to quantity changes. Thus if no major unforeseen conditions are encountered and the employer orders no extra work, the cost of the job to the employer will come very near the original sum tendered. The use of bills of quantities has been the normal method of payment in standard forms of contract for many years. This method is particularly effective where the employer wishes to control the design, or has the works largely designed before going out to tender.

Barry Benator & Albert Thumann (2003) stated that these require sufficient design definition or experience in order to estimate the unit/quantities for the work. Contractors then bid fixed prices for each unit of work. The advantage is that the time and cost risk is shared: the owner will be responsible for the total quantities, and the contractors will have the risk of the fixed unit price.

2.4.2. Lump sum contracts

Alan C. Twort and J. Gordon Rees (2004) stated that a lump sum price may be called for, or a series of lump sums. This is best suited to easily defined, relatively simple constructions, involving little below-ground work. However, some quite large above-ground constructions are paid for by lump sum. Sometimes a separate section of the bill for pricing allows for the foundation work of a building to be paid for ‘on measure’. In some kinds of civil engineering work the lump sum payment method can cause serious risks upon a contractor, causing him to add a substantial sum to his tender. This is particularly so for design-and-build or turn-key projects where the contractor has

to undertake detailed design as well as construction. The employer has to pay these additional sums whether or not any risks materialize. A disadvantage is that an employer may have to pay a high price for any alteration or addition he wants to the project, because the contractor is only committed to undertaking a fixed amount of work for the fixed payment. Payments under lump sum contracts are usually made in installments as set out in the contract according to stipulated stages of completion, or linked to a programme or activity schedule.

Barry Benator & Albert Thumann (2003) added that in this type of contract, the contractor is generally free to employ whatever methods and resources it chooses in order to complete the work. The contractor carries total responsibility for proper performance of the work although approval of design, drawings, and the placement of purchase orders and subcontracts can be monitored by the owner to ensure compliance with the specification. The work to be performed must be closely defined. Since the contractor will not carry out any work not contained in the specification without requiring additional payment, a fully developed specification is vitally important. The work has to be performed within a specified period of time, and status/progress can be monitored by the owner to ensure that completion meets the contractual requirements.

2.4.3. Cost reimbursement contracts

In a reimbursable contract the contractor is usually reimbursed his expenditure monthly on submission of his accounts, which must include evidence of payments made to suppliers of materials, gross wages paid to employees, and hours operated by plant. The invoices for materials have to be checked to ensure they are materials used on site. Plant rates have to be pre-agreed, and different rates may apply for plant 'standing' or 'working'; with lump sums payable for bringing plant to site and taking it away. Where a fixed fee has been agreed for his overheads and profit, this is usually paid in stages as the contract sets out. The contractor usually remains responsible for constructing the works, his methods and expenditure being agreed with the employer, or on a day-to-day basis with the employer's project manager or resident engineer on site. Under any cost reimbursement contract it is essential to detail just what costs are to be paid, and which are covered by the fees or other sums. It may also be necessary to identify the risks carried by each party to determine whether some costs are to be excluded (Alan C. Twort and J. Gordon Rees 2004).

2.4.4. Target contracts

These are usually cost reimbursement contracts, but with an estimated target cost set for the works cost, and a fixed or percentage fee for the contractor's head office overheads and profit. If the contractor's expenditure exceeds the target he has to bear a proportion of the excess; if his expenditure is less than target he receives a proportion of the difference as a bonus. Thus there is a financial incentive to the contractor to be efficient and save costs. But setting a fair target price can be difficult, and impossible if the amount of work to be done is unpredictable. If a target has to be revised, a dispute may arise between employer and contractor as to what the new target should be; this defeats the purpose of this type of contract. If the work is reasonably well defined, then a measurement contract is usually suitable (Alan C. Twort and J. Gordon Rees 2004).

2.5. CONSTRUCTION CONTRACT ADMINISTRATION

2.5.1. Introduction

Contract administration is one of the most important jobs related to construction projects. It involves numerous tasks both before and after contract execution and work order issuance, out of these numerous tasks the issuance of payment certificate to the contractor is the most important issue in this thesis.

According to Thomas E Uher and Davenport Philip (2002) the success of contract administration depends on an effective communication between all the parties involved. This involves establishing relationships between the parties, defining responsibilities and determining the most appropriate administrative procedures. The contractual parties must ensure that the lines of communication are established and kept open throughout the contract period. They also added that the fundamental aspect is to create a workable relationship between the contractual parties. This involves the determination of rules and procedures to be followed in the administration of the contract.

2.5.2. Contract administration for employers

Effective administration of construction contracts is a prerequisite for achieving successful project outcomes (Thomas E Uher and Davenport Philip, 2002). They also stated that the fundamentals of contract administration relevant to the principal are:

- To appoint suitable consultants
- To define project scope
- To set the key project objectives of cost, time and quality
- To assist in formulating a project brief
- To select the most appropriate method of project delivery
- To ensure accuracy and completeness of tender documentation
- To award a contract to the contractor on fair and equitable conditions of contract
- To appoint an experienced superintendent for administering the contract during the construction stage
- To avoid making changes to the design unless knowing the cost and time impact of such changes
- To pay the contractor strictly in accordance with the contract
- To monitor progress and the use of a contingency
- To resolve issues as early as possible before they develop into major problems
- To document actual progress in terms of cost, time and the use of resources to be able to defend against a potential claim from the contractor
- To advise the contractor in writing of any deviation from contract conditions and to request compliance with same within a specified period.

2.5.3. Contract administration for contractors

According to Thomas E Uher and Davenport Philip (2002) the fundamental aspects of contract administration from the contractor's point of view are:

- To execute the project strictly in accordance with the contract conditions
- To award subcontracts on fair and equitable subcontract conditions
- To monitor and control progress of subcontractors

- To pay subcontractors on time
- To minimize overall project time, thus reducing site overheads
- To balance increased direct costs of additional resources on critical activities, against possible saving in site overheads
- Maximize use of resources and any additional work required
- To allow sufficient time to rearrange activities, acquire additional resources; perform additional planning, fabrication, etc.
- To manage extensions of time and a prolongation of overhead costs
- To recommend to the employer not to make any changes to the design
- To document the actual progress compared with a program to identify areas of progress loss
- To take immediate action on contractor-caused problems and immediately advise the employer of other problems
- To instruct all internal staff to carry out work as specified in the contract documents, unless written instructions have been given by the principal's representative.

According to Barry Benator & Albert Thumann (2003), it is essential that the administration and management of contracts results in reducing risks, maximizing cost savings, minimizing claims and improving economic return. These results can only be achieved through effectively managing contract risks: developing fair contract documents, engaging in effective negotiating practices, and employing outstanding communication skills.

Alan C. Twort and J. Gordon Rees (2004) also added that the advantage of employing an engineer who has to administer the contract impartially is that both the employer and the contractor can expect their interests to be dealt with fairly. The contractor can expect fair payment for extra work ordered or arising from some unforeseen trouble, his risks are reduced, thus enabling him to submit his keenest prices. Both the employer and the contractor can, however, challenge any decision of the engineer by taking the matter in dispute to a conciliation procedure, adjudication, or to arbitration for settlement.

2.6. CONTRACT CONDITIONS USED IN PUBLIC PROJECTS

2.6.1. Introduction

Conditions of contract are included within the contract to express the relationship between employer and contractor and to define explicitly what is to happen if that relationship is disturbed by the failure of either party to fulfill their obligations. To this extent they are a reflection of the practicalities of the contract work. Barry Benator & Albert Thumann (2003) stated that while the same risks/liabilities can be established for most forms of contract, the price for those risks/liabilities can vary significantly, depending on contracting skills and the business environment/market place.

Bennett F. Lawrence (2003) justifies that, Conditions of contract are often conveniently described as being either 'general' or 'special'. Special conditions may be required, either because of some issue not dealt with in the general conditions or because the employer wishes to have the general conditions modified in certain respects.

2.6.1.1. General conditions

Most construction contracts include ‘general conditions of contract’. These are usually a set of written conditions covering matters common to construction contracts such as progress payments, construction program, variations, etc.

The general conditions, sometimes called the general provisions, set forth the rights and responsibilities of the owner and contractor and also of the surety bond provider, the authority and responsibility of the design professional and the requirements governing the various parties’ business and legal relationships. These conditions are ‘general’ in the sense that they can apply to any project of a certain type.

2.6.1.2. Special conditions

If the general conditions could apply to any project of the type being designed and built, there will surely be some special circumstances associated with the non-technical aspects of this particular project. The special conditions, variously known as special provisions, supplementary general conditions or particular conditions cover these project-specific matters. These sections may either add to or amend provisions in the general conditions. Additions to the general conditions might

include requirements for completion date, owner-provided materials and the name and address of the design professional.

2.6.2. The ministry of works & urban development standard conditions of contract

This condition of contract is officially, known as "Standard conditions of contract for construction of civil work projects". It has been in practice since December, 1994 and it contains 75 clauses including form of agreement & form of performance bond. Its structure & content resembles that of FIDIC standard conditions of contract for civil engineering works, fourth edition, 1987. The project delivery system adopted is that of design-bid-build. The type of contract is based on bill of quantities or BOQ i.e. it is an ad measurement contract.

2.6.3. The public procurement agency (PPA) general conditions of contract

The public procurement agency, under its legal mandate provided under the public procurement proclamation, it has prepared & issued certain standard tender & contract documents for the purpose of public procurement. The conditions of contract are applicable to the procurements of the federal government. The conditions of contract are based on design-bid-build project delivery system and the type of contract could be based on BOQ, in which case it becomes measurement based and/or based on activities schedule, in which case it becomes lump sum.

2.7. PAYMENT IN A CONSTRUCTION CONTRACT

2.7.1. Introduction

Payment in a construction contract is an agreed sum of money paid by the employer to the contractor. The provisions relating to payment concern the way the contractor is paid by the employer. The consideration given by the employer to the contractor is not always a fixed amount of money. However, there are only certain circumstances in which the contract sum can be changed and the most important of these is where there are variations.

The contractor undertakes to carry out and complete the works in return for the employer's promise to pay him a named sum of money. This money under the MoWUD conditions of contract clause 58 is named as "provisional sum". This sum, adjustable in defined circumstances, is to be paid to the contractor at times and in a manner specified in the conditions. The employer usually makes an advance payment so that the contractor will not face financial problem in mobilization of equipment and materials for the project.

2.7.2. Types of payment in construction contracts

2.7.2.1. Advance payment

The employer must pay any amount entered against in the contract particulars as advance payment on the stated date. It is reimbursed to the employer by deducting cumulatively the installments specified in the contract particulars in the calculation of the amount to be stated in interim certificates as payable to the contractor. Clause 51(1) of PPA (2006) states that the employer shall make advance payment to the contractor of the amount stated in the special conditions of contract by the date stated in the special conditions of contract, against provision by the contractor of an unconditional bank guarantee in a form and by a bank acceptable to the employer, denominated in Ethiopian birr in the amount of the advance payment. The guarantee shall remain effective until the advance payment has been repaid, but the amount of the guarantee shall be progressively reduced by the amounts repaid by the contractor and interest will not be charged on the advance payment.

2.7.2.2. Interim payment

In any construction project cash flow is very essential and most construction contracts recognize this fact; by allowing for the making of payment on account to the contractor before the works are completed.

Clifford J. Schexnayder and Richard E. Mayo (2004) stated that contractors are normally paid monthly; however, it is necessary to read the contract to understand the details. They also added that, one of the most important aspects of any owner's reputation with contractors is the time required to process the payment after submission of the monthly pay estimate by the contractor.

Slow payment or delayed payment leads to higher bids and fast payment leads to lower bids. The actual process of submitting the monthly pay estimate involves estimating the percentage of completion of each job activity, calculating the amount due for each of those activities, and subtracting the retention money from the total.

The engineer issues interim certificates stating the amounts to be paid to the contractor, following the contractor's request for payment throughout the construction period. The amount of money in an interim certificate is an installment of the contract sum reflecting the accomplishment of the contractor's obligations since the previous interim certificate. The amount in an interim certificate is to be determined based on the work the contractor has executed since the previous interim certificate.

Most standard conditions of contract contain specific provisions for interim payments and require payment of interest to the contractor if the employer fails to pay on time. The timing of these interim payments as the work proceeds is of importance to both employer and contractor.

Under the MoWUD and PPA conditions, regular payments based on the quantity of work done during the previous month, must be made by the employer to the contractor at monthly intervals. The amount of work done is measured by the engineer under the contract, and valued in accordance with the terms of the contract. The engineer then issues a certificate of payment showing the amount which the employer must pay to the contractor.

Clause 60(2) of the MoWUD conditions of contract also justifies that "the contractor will be paid monthly, within 30 days of the presentation of the engineer's interim payment certificate to the employer, 100% of the estimated value of the work executed up to the end of the previous month, together with the value of materials on site intended to form part of the permanent work as and from such time as they are reasonably, properly and not prematurely brought upon the site but only if adequately stored and/or protected against weather or damage. Payment shall be subject to retention in the sum of 10% of value certified until completion of the works. The amount shall be reduced to 5% at completion, which sum shall be retained until the expiration of the maintenance period."

2.7.2.3. Final payment

Progress payments are payments made only on account of the final amount to be requested and contracts usually provide a time within which the contractor must make a final request. Clause 60(6) of the MoWUD condition of contract states that, not later than 30 days after the date of issue of the maintenance certificate the contractor shall submit to the engineer a statement of final account with supporting documents showing in detail the value of the work done in accordance with the contract together with all further sums which the contractor considers to be due to him under the contract. Within 30 days after receipt of this final account and of all information reasonably required for its verification, or after the issue of the maintenance certificate, whichever is the later, the engineer shall issue a final certificate.

2.8. VARIATIONS

During the execution of the construction contract, one matter that requires careful documentation and thorough communication is the case of changes in the work. In any projects, it is common that some changes will be made for different reasons. Under clause 51(1) of the MoWUD conditions of contract it is stated that the engineer shall make any variation of the form, quality or quantity of the works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion be desirable, he shall have power to order the contractor to do and the contractor shall do any of the following:-

(a) Increase or decrease the quantity of any work included in the contract,

(b) Omit any such work,

(c) Change the character or quality or kind of any such work,

(d) Change the levels, lines, position and dimensions of any part of the works, and

(e) Execute additional work of any kind necessary for completion of the works and no such variation shall in any way vitiate or invalidate the contract, but the value, if any, of all such variations shall be taken into account in ascertaining the amount of the contract Price.

According to Bennett F. Lawrence (2003), changes, also known as variations, arise for many reasons like;

- The owner may decide to add some new item to the project.
- Delete some portion of it or add to, reduce or modify an already defined part of the job.
- Unexpected site conditions discovered during the course of construction, including soil conditions, archaeological findings, endangered species or hazardous materials, may require a change.
- Discrepancies may be discovered in the contract documents.
- Codes or regulations may change after the contract is signed, requiring a change in the contract.
- Products originally specified may not be available.

Clause 55 of the MoWUD conditions of contract justifies that the quantities set out in the bill of quantities are the estimated quantities of the work, but they are not to be taken as the actual and correct quantities of the works to be executed by the contractor in fulfillment of his obligations under the contract. And also clause 57(5) of the same condition of contract states the works shall be measured in accordance with the method of measurement stated in the bill of quantities.

2.8.1. Valuation of variations

In a construction contract the employer agrees to pay the contractor a stated amount of money which is known as the provisional sum, for the construction of a certain work. Whereas, changes to the provisional sum may occur as a result of variations arising for different reasons which lead to additions to or omissions from the original work during the course of construction. But, it is necessary to control such changes and keep them as minimum as possible, since variations are usually the cause of conflict and delay of a construction project.

When a variation is validly issued the extra work remains to be valued. Under the MoWUD conditions of contract clause 52(1), it is mentioned that all extra or additional work done or work omitted by order of the engineer shall be valued at the rates and prices set out in the contract if, in the opinion of the engineer, the same shall be applicable. If the contract does not contain any rates or prices applicable to the extra or additional work then suitable rates or prices shall be agreed upon

between the engineer and the contractor. In the event of disagreement the engineer shall fix such rates or prices as shall, in his opinion, are reasonable and proper.

According to John Murdoch and Will Hughes (2001), there are three approaches to valuations of extra works.

I. The contractor and employer might negotiate a satisfactory sum, on the basis that parties to a contract are free to re-negotiate the terms at any time.
II. The contract administrator follows express terms laid down in the contract for deriving a value from the contract documentation.
III. The contractor follows express terms in the contract for deriving a value, subject to the approval of the contract administrator.

2.9. PAYMENT CERTIFICATES AND CERTIFICATION

The regular flow of cash is very critical to a contractor's survival. As a result, interim certificates are issued at intervals as the work proceeds, and their issue entitles the contractor to be paid a certain proportion of the contract price. Under a construction contract, there is usually a prescribed time for the engineer to issue a progress certificate and the issue of such a certificate by the engineer imposes upon the employer a strict obligation to make payment.

John Murdoch and Will Hughes (2000) justify that interim certificates exist simply as a mechanism for confirming that an installment of the consideration is due to the contractor. Whichever method is used to calculate the amount of money due, an interim certificate is not conclusive about anything. It says nothing about quality of materials or workmanship, nor does it indicate satisfaction with the work done to date. Anything included in such a certificate may yet be the subject of a later certificate. It is only the final certificate that is ever conclusive which signifies the contract administrator's satisfaction with the work, or the amount that is finally due to the contractor, or both of these things. As a result, the only obligation arising from an interim certificate is an obligation on the employer to make a payment within the stated time. Failure to do so is a serious breach of contract.

Under the MoWUD condition of contract clause 60(1) it is stated that the amount to be included in an interim certificate should cover;

(a) The quantities and value of the permanent work executed on Site.

(b) The value of materials on site intended to form part of the permanent work together with supporting invoices.

(c) The value of temporary work, as included in the bill of quantities and completed on Site.

(d) An amount reflecting any changes in cost pursuant to clause 70 hereunder.

(e) Amounts approved in respect of day works executed up to the end of the month in question.

(f) The monthly statements shall be in an approved form and shall comprise an original and one copy, each duty signed by the contractor.

The purpose of including the value of materials stored on site in interim certificates is because the procurement of construction materials and equipment in advance is a good practice that saves money and promotes the timely completion of construction projects. Therefore by allowing progress payments to include payment for materials and equipment stored at the construction site, the employer can easily take the full benefit of advance procurement of materials and equipments which are directly necessary for the specific project.

The standard conditions of contract for construction of civil work projects (MoWUD, 1994) places the responsibility for carrying out interim valuations and calculation of what is due and finally issuance of the interim certificates upon the engineer. Clause 2 of the said condition of contract provides the engineer to issue this certificate in response to the contractor's request for payment. If the engineer believes that the work has progressed to the point indicated and the quality of the work is in accordance with the contract documents, such a certificate can be issued for each periodic payment request.

Certification is the most important aspect of these decision-making powers related to the issue of certificates. These have been defined by Wallace (1995), as the expression in a definite form of the exercise of the judgment, opinion or skill of the engineer, architect or surveyor in relation to some matter provided for by the terms of the contract. However, this does not mean that every expression

of opinion or decision given by the contract administrator will amount to a certificate. It will only be a certificate if it is so described in the contract, or can be so treated by implication.

2.9.1. Timing of interim payments

In the construction industry, it is common practice for payment of the contract sum to be made by installments. One of the main purposes of this is to reduce the need for the contractor to fund the development of the project. This is because the total value of each contract forms a large proportion of a contractor's annual turnover.

Clause 60(2) of the MoWUD condition of contact sets out the method and the timescale in which the employer is to pay the contractor for work done. It says "the contractor will be paid monthly, within 30 days of the presentation of the engineer's interim payment certificate to the employer…" but, this condition of contract says nothing about what happens if a situation arises where the contractor has not been paid during the construction of the works. Whereas, the PPA standard bid document sub clause 43.1 states that if the employer makes a late payment, the contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

2.9.2. Procedures for payment

The contractor is paid progressively as the work proceeds. These progress payments are based on a progress claim (request for payment) prepared by the contractor for the work he has executed. The claim outlines the breakdown of the work and the quantity of work completed against each item of work. The progress claim also usually show approved contract variations. Whenever the engineer receives a payment request document from the contractor, he will ensure the compliance of the works executed with that of the contractual drawings, specification and the quantity of the work executed. In some instances the amount claimed may be more or less than the value of works completed. The engineer will adjust progress payments accordingly and after verifying the amount

claimed, he will then issue a progress certificate based on an assessment of the value of completed work and sends it to the employer, so that, payments can be made to the contractor.

The progress certificate states that a certain value of work has been completed and therefore the employer should pay for it. If the employer is a government, it may need more than one person to authorize the payment, and the account then has to be passed to the paying department of the authority.

Both the MoWUD and the PPA conditions of contract require payment by the employer within 30 days after the engineer's payment certificate. But the later obliges the employer to pay interest on late payments. Under sub clause 43.1 of this condition of contract it is stated that if the employer makes a late payment, the contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the date by which the payment should have been made up to the date when the late payment is made at the prevailing rate of interest for commercial borrowing for each of the currencies in which payments are made.

2.10. CONTRACTUAL REMEDIES FOR DEFAULTS OF PARTIES

The construction contract is unique in that it seeks to provide for a specific remedy in the event of any breach of the terms and conditions within its framework and/or for a contractual entitlement in respect of specified events. Therefore, it is essential that the parties and those who represent them fully comprehend the terms of the contract and the remedies available to them under it.

Basically, As John Murdoch and Will Hughes (2000) stated, the parties to the contract are obliged to carry their obligations to their conclusion, unless there are express clauses setting out circumstances relieving them of this obligation. Most general contracts carry such clauses, for example, giving an employer the power to determine the contractor's employment if the contractor; fails to make regular progress, suspends work or becomes insolvent. Similarly, a contractor may have the right to determine the contract if an employer obstructs the issue of certificates, continuously suspends the works or becomes insolvent. Such determination can only take place within the express terms of the contract. The absence of such terms would leave the parties reliant upon common law remedies.

Under the MoWUD condition of contract, clause 69(1) default of the employer, it is stated that In the event of the Employer:-

a. Failing to pay to the contractor the amount due under any certificate of the engineer within thirty days after the same shall have become due under the terms of the contract, subject to any deduction that the employer is entitled to made under the contract, or
b. Interfering with or obstructing or refusing any required approval to the issue of any such certificate, or
c. Becoming bankrupt or, being a company, going into liquidation, other than for the purpose of a scheme of reconstruction or amalgamation, or
d. Giving formal notice to the contractor that for unforeseen reasons, due to economic dislocation, it is impossible for him to continue to meet his contractual obligations the contractor shall be entitled to terminate his employment under the contract after giving thirty days' prior written notice to the employer with a copy to the engineer

CHAPTER THREE

3. DATA COLLECTION

The data used for the research is primary data and it is collected by a questionnaire that is designed for the same purpose and distributed to respondents of the three target groups, who have a direct involvement on the projects under study.

3.1. QUESTIONNAIRE DESIGN

The questionnaire designed for this research includes both the open and closed ended forms of questions. In the open ended part of the questionnaire respondents were asked to express their opinion or to reply in whatever content they like for the questions asked, concerning the different payment issues mentioned in this research. In the closed ended part of the questionnaire the respondents were asked simply to show their level of agreement on the statements outlined and for which they are given five different levels of agreement for each. This will be the case, if at all they agree in that construction payment is an issue in public building construction projects in Addis Ababa. For those who have no construction payment related problems and disagree in that construction payment is an issue in public building construction projects in Addis Ababa, the questionnaire has a part that investigates what things they are doing differently. (Please see appendix A).

3.2. RESEARCH POPULATION SIZE

The population for this research is the public building construction projects which were commenced starting from year of 2001 to 2004 E.C. For the purpose of this research those construction projects in the hands of class one and two local contractors only are selected and the class of the contractors was identified according to the 2005E.C data obtained from ministry of urban development and construction**.** The major reason for selecting these classes is in order to limit the population in to an affordable size for the study and the other basic reason is to control that the population of the research could be dominated by housing projects, by the fact that these projects are too many in number in the city, but rarely executed by contractors of the stated classes i.e., class one and two. In

addition to this, the two classes are believed to run multimillion projects, have better understanding of contractual issues, and better record keeping practice. The list of projects is obtained from the government construction agency and housing projects office of Addis Ababa and the population size is found to be twenty eight projects after passing through the above stated selection criteria. Therefore, this study was planned to be conducted on twenty eight public building construction projects that are being constructed by construction firms of grade one and two only and the population includes office buildings, hospital buildings, educational buildings and housing projects in the city.

3.3. RESEARCH SAMPLE SIZE DETERMINATION

In this research, it is decided to study the whole population, i.e. twenty eight projects as explained in section 3.2 above, and therefore, the sample size for the study is equal to the population size. Whereas, the sample size originally determined and planed to study was not used fully for different reasons. The first reason was that some of the projects were completed and it was very difficult to get anybody on the site in order to get information or data concerning a specific project. The other reason was that in some of the sites it was difficult to reach anyone on the site, simply because of the absence of professionals from the site, though repeated attempts were made to get them.

3.4. QUESTIONNAIRE DISTRIBUTION

After determining the research sample size, a total of forty-one questionnaires were distributed and delivered in person to the representatives of the three target groups (the employer, the contractor and the consultant) of the projects under study, in their respective construction sites. So, the questionnaires were distributed to the representatives of each party on site level and who have a direct involvement and believed to have sufficient know-how about a specific project. For the sample determined, twelve questionnaires were distributed to the employer which is 29.27 % of the total number of questionnaires. Twenty-one of the questionnaires which are 51.22 % of the total, were distributed to contractors of the projects and eight questionnaires which constitute 19.51 % of the total questionnaires were distributed to the representatives of consultants of the projects.

The quantity of questionnaires distributed to the parties is different as stated above. This is because, there is no one separate employer, one contractor and one consulting company for each of the

twenty one projects and also, most of the projects are not externalized and given to private consulting companies, rather they are designed and supervised by the government construction agency itself. As a result, the questionnaires distributed to the employer's representatives are twelve in number; and this is because the employer usually will not assign one engineer for each project. The questionnaires distributed to contractors' representatives are twenty one, because for every project contractors have at least one or two representatives on site level. For the consultant representatives eight questionnaires were distributed because from the twenty one projects only eight of them are designed and supervised by a private consulting company. The remaining are either designed and supervised or designed by another organization but supervised by the government construction agency as explained above.

The respondents of the questionnaires were professionals with a minimum experience of three years and maximum of twelve years with different responsibilities in the projects under study which includes office engineers, site engineers, project managers, resident engineers and the employer's project engineers according to the data obtained from the questionnaire. The questionnaire distributed is included in appendix A.

CHAPTER FOUR

4. DATA ANALYSIS AND DISCUSSION

4.1. QUESTIONNAIRE RESPONSE RATE

The total number of questionnaires distributed to respondents was forty-one as discussed in section 3.4 above. From the twelve questionnaires distributed to employer's representatives, eight of the questionnaires were collected and only four of them were considered valid. The validity is determined based on adequacy of the responses given. i.e., questionnaires with no responses and partial responses are considered invalid. Accordingly, from the twenty-one questionnaires distributed to respondents of contractors eleven questionnaires were returned and eight of them were considered valid. To the consultant's side, eight questionnaires were distributed and seven questionnaires were collected out of which five questionnaires were found as a valid response for the study. As shown in the table below, a total of forty-one questionnaires were distributed to respondents and twenty-six of them were collected out of which seventeen questionnaires with valid responses were collected which shows a 41.5% response rate. This response rate is significant and representative enough as compared to what Richard Fellows and Anita Liu 2008 have stated. They mentioned that a useable response rate of 25-35 % is expected from postal questionnaires.

Table 1: *Questionnaire response rate*

	Respondents			Total
	Employer	Contractor	Consultant	
Questionnaires distributed, (A)	12	21	8	41
Questionnaires returned	8	11	7	26
Valid responses, (B)	4	8	5	17
Response rate (valid), (C) = (B/A)*100	33.3%	38.0%	62.5%	**41.5%**

As it is discussed in section 3.4 and indicated on the table above the number of questionnaires distributed to parties is different and this is mainly because since the employer is a government body and professionals are not employed on a one to one (one engineer for one project) bases. In addition to this most of the projects under study are supervised by the government construction

agency itself. So, the number of questionnaires distributed to the consultant representatives is also different.

4.2. MEAN VALUE DETERMINATION

The rating given by different respondents are collected and mean values are determined for each using equation 4.1, a simple statistical formula of arithmetic mean calculation for a frequency distribution, with minor modifications.

$$\mathbf{M} = \frac{\sum \mathbf{Nr} * \mathbf{R}}{\sum \mathbf{Tr}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \textit{equation [4.1]}$$

Where;

M = Mean value of ratings.

Nr = Number of respondents who give a specific rating.

R = Rating given by respondents to a specific issue. i.e. [5 to 1], from strongly agree to strongly disagree respectively.

Tr = Total number of respondents who gave different ratings.

For example, the rating given by respondents and the mean value calculations carried out for construction payment delay is demonstrated below.

Table 2: *Mean value calculation*

Problem	Respondents	Rating					Mean value
		5	4	3	2	1	
Construction payment delay	Employer	1	3	0	0	0	4.3
	Contractor	7	1	0	0	0	4.9
	Consultant	3	2	0	0	0	4.6
	Aggregate responses	11	6	0	0	0	4.6

i. The mean value of responses obtained from the employer's respondents.

$$\mathbf{M} = \frac{(\mathbf{1} * \mathbf{5}) + (\mathbf{3} * \mathbf{4}) + (\mathbf{0} * \mathbf{3}) + (\mathbf{0} * \mathbf{2}) + (\mathbf{0} * \mathbf{1})}{\mathbf{1} + \mathbf{3}} = \frac{\mathbf{17}}{\mathbf{4}}$$

$$= \underline{\mathbf{4.3}}$$

ii. The mean value of responses obtained from contractors' respondents.

$$\mathbf{M} = \frac{(\mathbf{7}*\mathbf{5}) + (\mathbf{1}*\mathbf{4}) + (\mathbf{0}*\mathbf{3}) + (\mathbf{0}*\mathbf{2}) + (\mathbf{0}*\mathbf{1})}{\mathbf{7}+\mathbf{1}} = \frac{\mathbf{39}}{\mathbf{8}}$$

$$= \underline{\underline{\mathbf{4.9}}}$$

iii. The mean value of responses obtained from consultants' respondents.

$$\mathbf{M} = \frac{(\mathbf{3}*\mathbf{5}) + (\mathbf{2}*\mathbf{4}) + (\mathbf{0}*\mathbf{3}) + (\mathbf{0}*\mathbf{2}) + (\mathbf{0}*\mathbf{1})}{\mathbf{3}+\mathbf{2}} = \frac{\mathbf{23}}{\mathbf{5}}$$

$$= \underline{\underline{\mathbf{4.6}}}$$

iv. The mean value of aggregate responses obtained from respondents of the questionnaire.

$$\mathbf{M} = \frac{(\mathbf{11}*\mathbf{5}) + (\mathbf{6}*\mathbf{4}) + (\mathbf{0}*\mathbf{3}) + (\mathbf{0}*\mathbf{2}) + (\mathbf{0}*\mathbf{1})}{\mathbf{11}+\mathbf{6}} = \frac{\mathbf{79}}{\mathbf{17}}$$

$$= \underline{\underline{\mathbf{4.6}}}$$

4.3. MEASUREMENT OF ASSOCIATION OF RANKS

In this research the spearman's rank correlation coefficient was used as a means of comparing the relationship between ranks obtained from ratings of respondents.

Daryl S. Paulson (2003), states that, a useful and very well known nonparametric correlation coefficient test involves the Spearman rank correlation coefficient. He also added that correlation is the measure of association between variables and a correlation of '1' is a perfect fit, and a correlation of '0' is total randomness (i.e., there is no relationship between the variables). In nonparametric statistics, we do not use the 0-1 scale but only whether the correlation is significant or not significant at a specific α (confidence interval).

Richard Fellows and Anita Liu (2008) also described the coefficient of correlation between ranks as it is a measure of the association between two variables which is determined from the ranks of observations of the variables and it is calculated using Spearman's coefficient of rank correlation ρ.

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)} \quad \text{.....equation [4.2]}$$

ρ = Spearman's coefficient of rank correlation

D = The difference in ranking

n = The number of variables

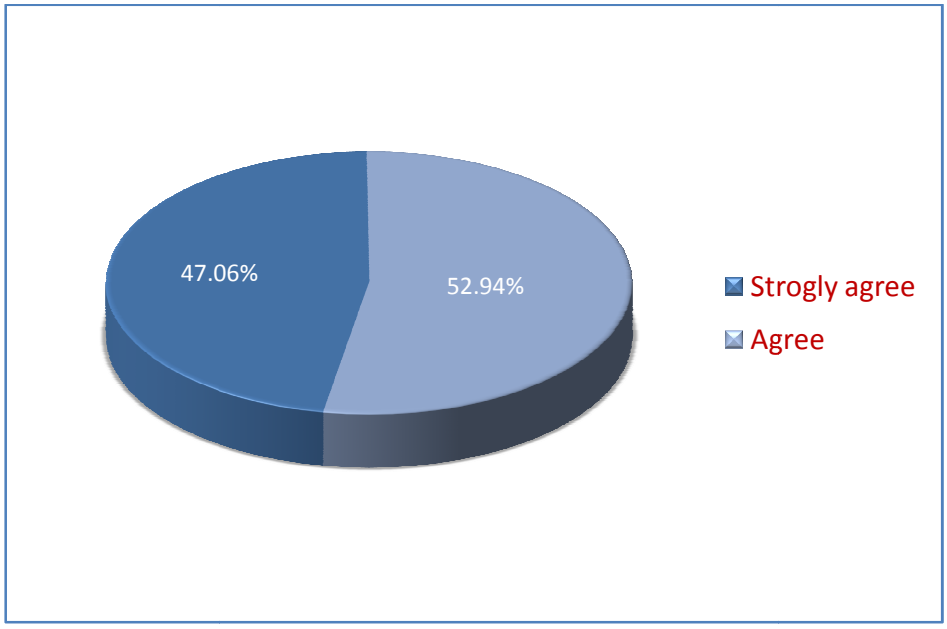
Accordingly, in this study after determining the mean values for all statements (variables) described in the questionnaire, ranks are given based on their respective mean value of ratings calculated.

Then, as the respondents of the questionnaire are from the three parties in the contract, rank correlation coefficients are determined to measure the degree of agreement in the rankings of employers, contractors and consultants, in three different groups of pairs (employer-contractor, employer-consultant, and contractor-consultant).

4.4. BASIC INFORMATION OBTAINED FROM RESPONDENTS

In the questionnaire designed for this research, respondents were first asked whether construction payment is an issue in public building construction projects in Addis Ababa or not, and they were given a chance to agree or disagree with the question based on a five point Likert scale. According to the seventeen valid responses collected from respondents and as it is illustrated in figure 2, **47.06%** of them have strongly agreed and **52.94%** of them have agreed that construction payment is an issue in public building construction projects in Addis Ababa.

Figure 2: *Level of agreement of respondents with the existence of the problem*



As it can be observed from the figure, no respondent has disagreed with the presence of the problem, and the result obtained signifies that all of the respondents have at least agreed that construction payment is an issue in public building construction projects in Addis Ababa and this clearly shows that the problem is widespread.

In this section of the questionnaire, respondents were also asked different questions about payment problems, major causes and consequences, based on their level of agreement with the problem. The first question was about payment problems they have encountered with in public building construction projects. Although it is expressed in different terms and statements by the respondents, construction payment delay is observed to be the most common problem in all cases. Some of the responses obtained are stated as follows;

- "Delay of payment by the client"
- "Delay at the client in payment issuing"
- "The payment will not be released at its right time and date"
- "The client didn't approve payment on time"
- "Delay during conformation of payment"
- "Unnecessary delay of settling payment"
- "Delay of payment during checking and approval"
- "Payment delay during budget closing time"

The major causes for the problem, according to the respondents are many in number and they are grouped under the following categories;

- "Bureaucratic payment system of the employer"
- "Long process of payment"
- "Too many officials should sign on it"
- "Extended and unwanted time for checking up"
- "Lack of good administration"
- "lagging of the project from the completion time"
- "Financial constraint of the client"
- "Shortage of budget"
- "Absence of budget especially from June – September" this is a time at which the government closes and allocates budget.
- "Underestimating the budget"
- "Including works not completed"
- "Submitting a payment request with exceeding or less the estimated cost of the work executed"

- "The payment requested and the work executed are not the same" this is a situation where the contractor's payment request includes amounts for works that are not executed.
- "Interest of the contractor to get more payment than actually executed" this refers to a situation where the contractor tries to cheat in order to get extra amount of money.
- "Proper data recording problems specially in substructure works"
- "Withholding payment certificates wrongly"
- "Unnecessary dispute with contractor and client finance office"
- "Corrupt practices"
- "Lack of knowledge of the construction industry" this is to the different individuals who may participate in one way or the other.
- "Payments are required to meet the minimum percentage of the contract amount" this is to say; as long as the stated percentage is not achieved the contractor will not be paid and may face financial difficulty.

Respondents were also asked to point out the consequences of the payment problem on the project and the responses obtained are grouped in the following categories;

- "Delay in completion of the work"
- "Delay on project progress"
- "The construction sometimes ceases completely"
- "Increase in project cost"
- "Cash flow problem on the contractor"
- "Disagreement between the parties"
- "Work defects have been seen"
- "Termination of the contract"
- "Leads to corruption for unethical professionals"

Besides asking respondents the major payment problems and the contributing factors it is attempted to gather what recommendations do they have to alleviate the problems. Accordingly, the following recommendations are forwarded from respondents.

- "Reducing the bureaucracy"
- "Improving the general administration"

- "Better to have a client representative with the knowledge of construction"
- "Assigning capable skilled professional"
- "Good to have sufficient budget"
- "If any variation exists approval of the client needs to be attached" this is to state that when contractors request payments for variation orders they have to attach evidence that signifies the work is an approved one.
- "Contractor should present his payment request based on the executed work and agreement"
- "Payment request should be supported by test results of executed works"
- "Contractors should be ethical on construction works"
- "There should be clear payment process format" this refers to the proper recording of the payment process.
- "There must be well organized department that follow payment related issues on the client/consultant side"
- "Write a reminder latter to the client" this is meant to say the contractor should notify the employer that his payment is not issued and he may face financial difficulties and the progress of the work may be hindered.
- "Positive attitudes should develop between parties" this is meant to say the work environment should not be that full of distrust and peoples from either party should understand each other and think positively while working together.

4.5. IDENTIFICATION OF THE MAJOR PAYMENT PROBLEMS

In the questionnaire designed for the study, three different payment related issues in the construction industry were incorporated and respondents were asked to show the existence or non-existence of those problems in public building construction projects in Addis Ababa, by giving rating of one to five based on the different levels of agreement stated in the questionnaire. Please refer appendix A.

In this research, for any of the statements outlined in the questionnaire and for which rating are given by respondents from the three parties, it is assumed that the aggregate mean value of ratings must be greater than three for the statement or variable to be considered as relevant for the study.

This assumption is made based on the fact that the respondents were requested to give a rating of one for 'strongly disagree', two for simply 'disagree' and three for an issue at which they are 'unsure or uncertain'. Therefore, a mean value of 'one' or 'two' means the majority of the respondents disagreed on a specific statement (variable), and there is no doubt that this variable can be rejected. Whereas, mean value of 'three' means the respondents are 50% sure and 50% unsure of a given statement. Therefore, considering an idea which the respondents are not sure or uncertain about, as true information is found illogical and it is assumed that statements with mean values of aggregate responses greater than three are the only appropriate ones for this research.

Accordingly, the rating for ***payment delay*** is the highest in all cases with mean values of ratings 4.3, 4.9, and 4.6 from the employers, contractors and consultants responses respectively and the aggregate of the three is found to be 4.6. This indicates that, payment delay is the most common and severe problem in public building construction projects in Addis Ababa, of the three types of problems considered. According to the respondents of the contractors and consultants, ***partial payment of sums due*** is regarded as the second major payment problem in public building construction projects in the city, having a mean value of ratings 3.4 and 3.6 from each respectively.

The response from the employers' respondents doesn't show that partial payment of sums due is a problem because the mean value of their responses is found to be only 2.3, which in the case of this research is not accepted or treated as an applicable mean value of ratings of respondents. But the mean value of aggregate responses from the three parties shows that it is the second ranked problem with mean value of 3.2. Whereas, ***non-payment of sums due*** is found to have a mean value of 2.0, 2.1, 2.4 and 2.2 from the employer's, contractors', consultants' and the aggregate responses of the three respectively. Therefore, as it is shown in table below non-payment of sums due, is not considered as a problem because its mean value is by far less than the minimum required. As a result of this non-payment of sums due is not a problem in public building construction projects in Addis Ababa.

Table 3: *Major payment problems*

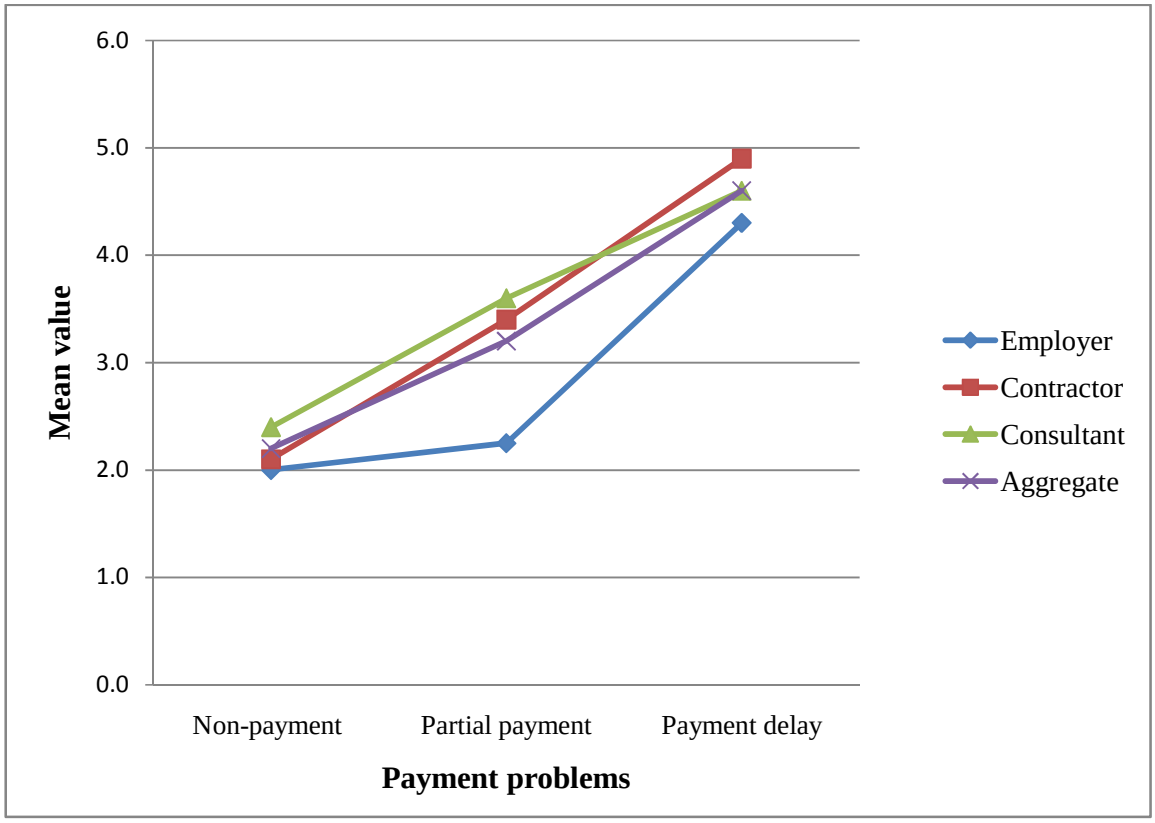
No	Payment problem	Mean values of ratings				Rank	Remark
		Emp.	Cont.	Cons.	Aggregate		
1	Payment delay	4.3	4.9	4.6	4.6	1st	OK
2	Partial payment of sums due	2.3	3.4	3.6	3.2	2nd	OK
3	Non-payment of sums due	2.0	2.1	2.4	2.2	3rd	NOT OK

Criteria;

* OK, *the aggregate mean value is greater than three and it is a relevant statement.*
* NOT OK, *the aggregate mean value is not greater than three and it isn't a relevant statement.*

The severity of those problems as the rating by the respondents of *the employer's, contractors', consultant's representatives and the aggregate* responses of those three target groups implies is illustrated in figure 3 below.

Figure 3*: Severity of major payment problems*



4.6. THE MAJOR CAUSE OF CONSTRUCTION PAYMENT PROBLEMS

In section 4.5, it is already identified that, payment delay and partial payment of sums due or under certification of payments are the major construction payment problems in public building construction projects in Addis Ababa. The problems are caused by different reasons originated from the employer, contractor and consultant who are taking part in the projects. The second question that the respondents were asked in the structured part of the questionnaire was about the causes of construction payment problems. Twenty six different causes of payment problems were outlined in the questionnaire to which eleven of them are considered to be contributed from the employer's, nine from the contractor's and six from the consultant's side.

In this section, the different causes are put together regardless of their origin or sources, compared and ranked based on their respective mean values of aggregate responses. As it is shown on table 4 below; bureaucratic payment system of the employer followed by the consultant's favoring the employer and the contractors' failure to make regular progress are the top three causes of construction payment problems with aggregate mean values of 4.2, 4.1, and 3.9 respectively, among the twenty six causes identified.

Table 4: *Summary of overall ranks of causes of payment problems*

No	Causes of Payment problems	Mean values and ranks of responses							
		Emp		Cont		Cons		Aggregate	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Problem with the measurement and valuation process	2.8	5	3.9	6	4.0	2	3.6	6
2	Bureaucratic payment system of the employer	3.3	3	4.8	1	4.2	1	4.2	1
3	Lack of commitment of employees of the employer	2.8	5	3.6	8	3.8	3	3.4	7
4	Problem in understanding contract clauses	2.3	7	3.6	8	4.0	2	3.4	8

5	Common corrupt practices of employees of the employer	2.3	7	3.9	6	3.6	4	3.4	8
6	Suspending the work frequently	2.8	5	3.6	8	3.6	4	3.4	8
7	The employer's failure to finance the project	3.3	3	3.8	7	3.8	3	3.6	6
8	Frequent variation orders	3.0	4	4.3	3	3.8	3	3.8	4
9	Refusal to pay for materials stored on job site	3.3	3	3.8	7	3.0	6	3.4	8
10	Refusal to pay interest on late payment	2.5	6	3.5	9	3.6	4	3.3	9
11	Inadequacy of the conditions of contract used, on payment matters	2.8	5	3.6	8	3.6	4	3.4	8
12	Requesting payment for defective works	2.8	5	3.4	10	4.0	2	3.4	8
13	Failure to make regular progress	3.3	3	4.1	4	4.2	1	3.9	3
14	The contractors Suspension of work	2.8	5	3.6	8	3.8	3	3.5	7
15	Insolvency/bankruptcy of the contractor	2.8	5	3.5	9	2.8	7	3.1	11
16	Submitting a request exceeding the estimated cost of the executed work	3.0	4	3.8	7	3.8	3	3.6	6
17	Delivery of Poor quality materials to job site	2.8	5	3.3	11	3.8	3	3.1	11
18	Insufficient study and understanding of the contract documents.	3.3	3	3.1	12	4.2	1	3.5	7
19	Problem in understanding contract clauses (contractors')	3.0	4	3.3	11	4.2	1	3.5	7
20	Disagreement in valuation of work completed	2.5	6	3.6	8	3.4	5	3.3	9
21	Problem in Valuation of variations	3.0	4	4.4	2	3.6	4	3.8	4
22	Favoring the employer (bias)	3.8	1	3.9	6	4.0	2	4.1	2
23	Absence of continuous supervision of the work under construction	2.5	6	3.8	7	3.8	3	3.7	5
24	Withholding payment certificates wrongly	2.8	5	3.1	12	3.8	3	3.2	10
25	Being dependent on the employer in valuing what is paid to the contractor	3.0	4	3.5	9	3.0	6	3.2	10
26	Weakness in making decisions on issues arising in the course of construction	3.5	2	4.0	5	3.8	3	3.8	4

In section 4.3 it was discussed that the spearman's rank correlation coefficient is used to test degree of agreement between ranks obtained from the ratings of parties' respondents. Accordingly, the spearman's rank correlation coefficient was calculated using equation 4.2 (the spearman's rank correlation coefficient formula). Whereas, before directly using the formula it is a must to determine the difference of ranks between each pair and the detailed calculation is illustrated in table 5 below, followed by the determination of spearman's rank correlation coefficient for the three pairs of respondents.

Table 5: *Spearman's rank correlation coefficient determination*

No	Causes of Payment problems	Rank			Differences					
					Emp-Con		Emp-Cons		Con-Cons	
		Emp	cont	cons	D	D^2	D	D^2	D	D^2
1	Problem with the measurement and valuation process	5	6	2	1	1	3	9	4	16
2	Bureaucratic payment system of the employer	3	1	1	2	4	2	4	0	0
3	Lack of commitment of employees of the employer	5	8	3	3	9	2	4	5	25
4	Problem in understanding contract clauses	7	8	2	1	1	5	25	6	36
5	Common corrupt practices of employees of the employer	7	6	4	1	1	3	9	2	4
6	Suspending the work frequently	5	8	4	3	9	1	1	4	16
7	The employer's failure to finance the project	3	7	3	4	16	0	0	4	16
8	Frequent variation orders	4	3	3	1	1	1	1	0	0
9	Refusal to pay for materials stored on job site	3	7	6	4	16	3	9	1	1
10	Refusal to pay interest on late payment	6	9	4	3	9	2	4	5	25
11	Inadequacy of the conditions of contract used, on payment matters	5	8	4	3	9	1	1	4	16
12	Requesting payment for defective works	5	10	2	5	25	3	9	8	64
13	Failure to make regular progress	3	4	1	1	1	2	4	3	9
14	The contractors Suspension of work	5	8	3	3	9	2	4	5	25
15	Insolvency/bankruptcy of the contractor	5	9	7	4	16	2	4	2	4
16	Submitting a request exceeding the estimated cost of the executed work	4	7	3	3	9	1	1	4	16
17	Delivery of Poor quality materials to job site	5	11	3	6	36	2	4	8	64
18	Insufficient study and understanding of the contract documents.	3	12	1	9	81	2	4	11	121
19	Problem in understanding contract clauses (contractors')	4	11	1	7	49	3	9	10	100
20	Disagreement in valuation of work completed	6	8	5	2	4	1	1	3	9
21	Problem in Valuation of variations	4	2	4	2	4	0	0	-2	4
22	Favoring the employer (bias)	1	6	2	5	25	1	1	4	16
23	Absence of continuous supervision of the work under construction	6	7	3	1	1	3	9	4	16

24	Withholding payment certificates wrongly	5	12	3	7	49	2	4	9	81
25	Being dependent on the employer in valuing what is paid to the contractor	4	9	6	5	25	2	4	3	9
26	Weakness in making decisions on issues arising in the course of construction	2	5	3	3	9	1	1	2	4
				$\sum D^2$	-	419	-	**126**	-	**697**

The Spearman's coefficient of rank correlation for the three pairs of respondents' category is calculated as follows;

$$\rho = 1 - \frac{6\sum D^2}{n(n^2-1)}$$

- Employer-Contractor; $\rho = 1 - \frac{6*419}{26(26^2-1)} = \mathbf{0.86}$
- Employer-Consultant; $\rho = 1 - \frac{6*126}{26(26^2-1)} = \mathbf{0.96}$
- Contractor-Consultant; $\rho = 1 - \frac{6*697}{26(26^2-1)} = \mathbf{0.76}$

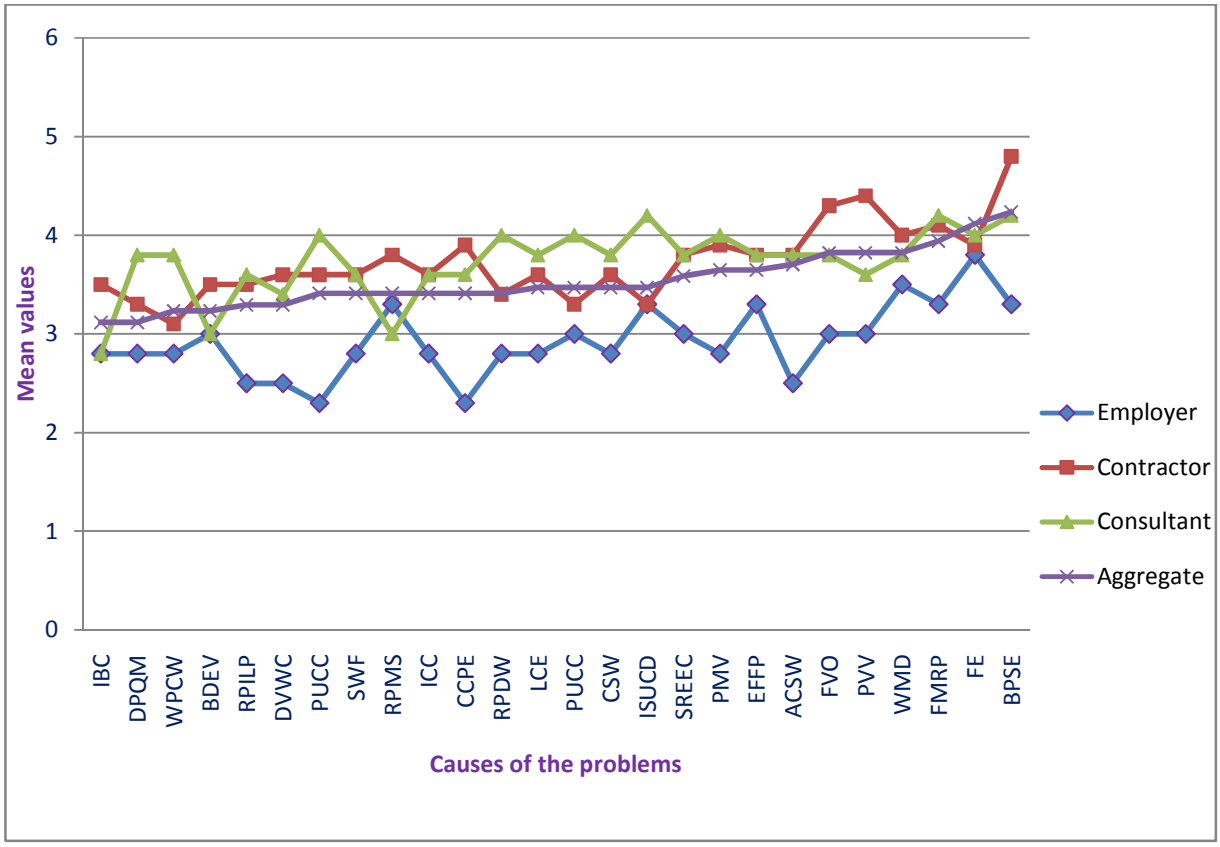
The rank correlation coefficient for the above overall ranking is shown in the table 6 below. The table shows the different values of coefficient of rank correlation for the rankings of the different pairs of respondents, on the causes of construction payment problems. The spearman test static table (see appendix B) shows the minimum correlation coefficient for α of 0.05(i.e. for 95% confidence level) and number of variables (n) of 26 to be **0.3299**. Whereas, in this case, all the three results summarized in table 6 below, are greater than the minimum required. Therefore, the rank correlation coefficient for variables in the causes of construction payment problems is well above the minimum required and there is a positive and strong correlation between the rankings of respondents.

Table 6: *Coefficient of rank correlation for causes of payment problems*

Responses	**Spearman's coefficient of rank correlation**
Employer-Contractor	0.86
Employer-Consultant	0.96
Contractor-Consultant	0.76

The twenty six causes of the payment problems considered in public building construction projects in Addis Ababa have different degree of severity. Figure 4 shows the severity of the causes based on their aggregate mean values from the least severe; insolvency/bankruptcy of the contractor and delivery of poor quality materials to job site to the most severe; bureaucratic payment system of the employer.

Figure 4: *Severity of causes of construction payment problems*



4.6.1. Causes from the employer's side

The responses obtained from the three parties are compiled on table 7 below, and the result shows that the mean values of ratings of all eleven causes outlined in the questionnaire are found to be above three. As it is illustrated in the table, the responses obtained signify that bureaucratic payment system of the employer followed by common corrupt practices of employees of the employer, frequent variation orders, problem with the measurement and valuation process and the

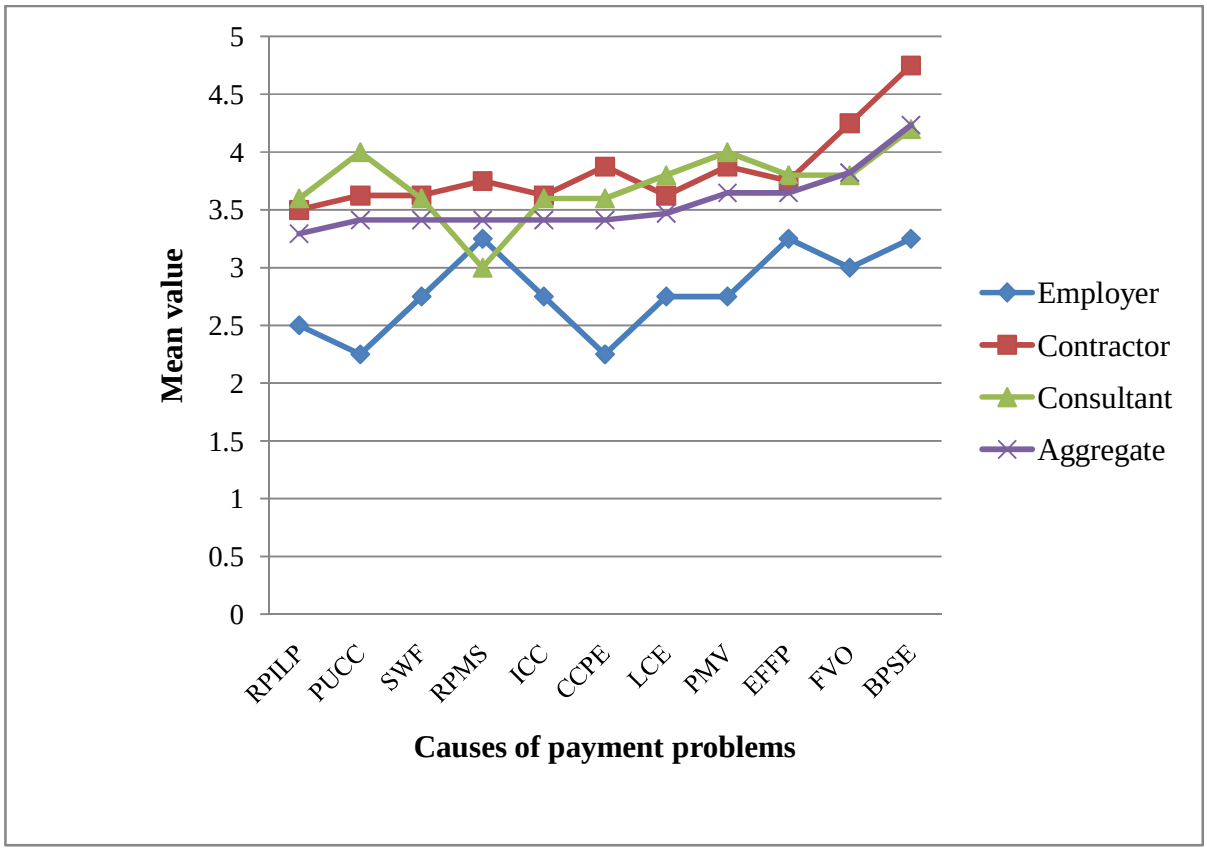
employers failure to finance the project are found to be the top five causes of construction payment problems that are contributed by the employer in public building construction projects in Addis Ababa.

Table 7: *Causes of construction payment problems from the employer's side*

No	Causes of Payment problem Contributed by the employer	Mean values of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Problem with the measurement and valuation process	2.8	3.9	4.0	3.6	3
2	Bureaucratic payment system of the employer	3.3	4.8	4.2	4.2	1
3	Lack of commitment of employees of the employer	2.8	3.6	3.8	3.5	4
4	Problem in understanding contract clauses	2.3	3.6	4.0	3.4	5
5	Common corrupt practices of employees of the employer	2.3	3.9	3.6	3.4	5
6	Suspending the work frequently	2.8	3.6	3.6	3.4	5
7	The employer's failure to finance the project	3.3	3.8	3.8	3.6	3
8	Frequent variation orders	3.0	4.3	3.8	3.8	2
9	Refusal to pay for materials stored on job site	3.3	3.8	3.0	3.4	5
10	Refusal to pay interest on late payment	2.5	3.5	3.6	3.3	6
11	Inadequacy of the conditions of contract used, on payment matters	2.8	3.6	3.6	3.4	5

According to the responses obtained, all considered causes of payment problems are found to be common in public building construction projects in Addis Ababa and the severity of these causes is illustrated in figure 5 below, from the lowest to the highest sever based on the aggregate mean values of the respective causes.

Figure 5: *Severity of causes of payment problems from the employer's side*



Where;

RPILP: Refusal to pay interest on late payment

PUCC: Problem in understanding contract clauses

SWF: Suspending the work frequently

RPMS: Refusal to pay for materials stored on job site

ICC: Inadequacy of the conditions of contract used, on payment matters

CCPE: Common corrupt practices of employees of the employer

LCE: Lack of commitment of employees of the employer

PMV Problem with the measurement and valuation process

EFFP: The employer's failure to finance the project

FVO: Frequent variation orders

BPSE: Bureaucratic payment system of the employer

4.6.2. Causes from the contractor's side

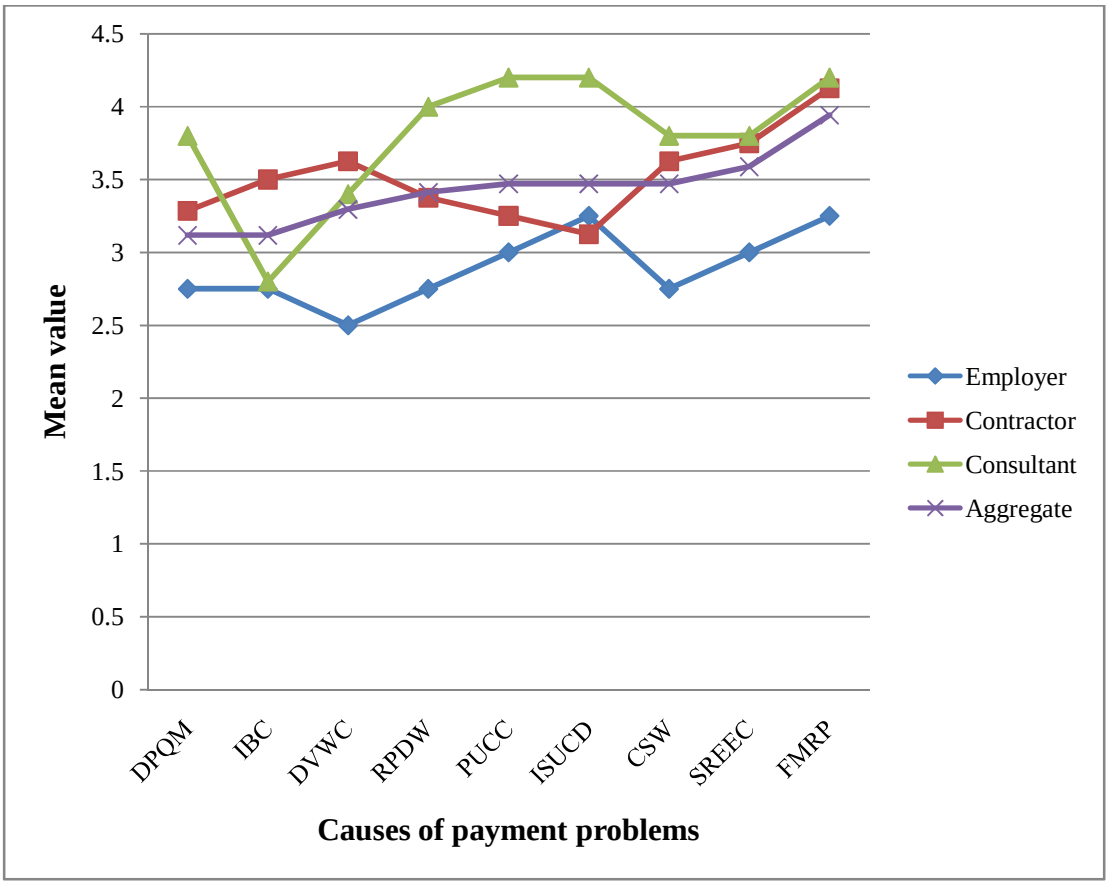
The responses obtained from the three parties are summarized on table 8 below and the result shows all the nine possible causes of payment problems outlined in the questionnaire are considered to be the causes of the payment problems in public building construction projects in the city. Among these; failure to make regular progress followed by submitting a request exceeding the estimated cost of the executed work, the contractors suspension of work, insufficient study and understanding of the contract documents, problem in understanding contract clauses, requesting payment for defective works etc are at the top of all causes of payment problem which are contributed by the contractors who are engaged in construction of public building construction projects in Addis Ababa.

Table 8: *Causes of construction payment problems from the contractor's side*

No	Causes of Payment problem Contributed by the contractor	Mean values of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Requesting payment for defective works	2.8	3.4	4.0	3.4	4
2	Failure to make regular progress	3.3	4.1	4.2	3.9	1
3	The contractors Suspension of work	2.8	3.6	3.8	3.5	3
4	Insolvency/bankruptcy of the contractor	2.8	3.5	2.8	3.1	6
5	Submitting a request exceeding the estimated cost of the executed work	3.0	3.8	3.8	3.6	2
6	Delivery of Poor quality materials to job site	2.8	3.3	3.8	3.1	6
7	Insufficient study and understanding of the contract documents.	3.3	3.1	4.2	3.5	3
8	Problem in understanding contract clauses	3.0	3.3	4.2	3.5	3
9	Disagreement in valuation of work completed	2.5	3.6	3.4	3.3	5

The severity of causes of construction payment problems from the contactors side is illustrated in the figure 6 below based on the mean value of aggregate responses, from the lowest sever delivery of poor quality material to the highest sever failure to make regular progress.

Figure 6: *Severity of causes of payment problems from the contractor's side*



Where;

DPQM: Delivery of Poor quality materials to job site

IBC: Insolvency/bankruptcy of the contractor

DVWC: Disagreement in valuation of work completed

RPDW: Requesting payment for defective works

PUCC: Problem in understanding contract clauses

ISUCD: Insufficient study and understanding of the contract documents.

CSW: Contractors Suspension of work

SREEC: Submitting a request exceeding the estimated cost of the executed work

FMRP: Failure to make regular progress

4.6.3. Causes from the consultant's side

Construction payment problems are not caused by employers and contractors default only. Consultants also contribute for the occurrence of construction payment related problems in different ways. For the purpose of this study six different causes of payment problems that consultants may contribute are considered and outlined in the questionnaire and respondents were asked to give rating for each based on their occurrence in public building construction projects of Addis Ababa city.

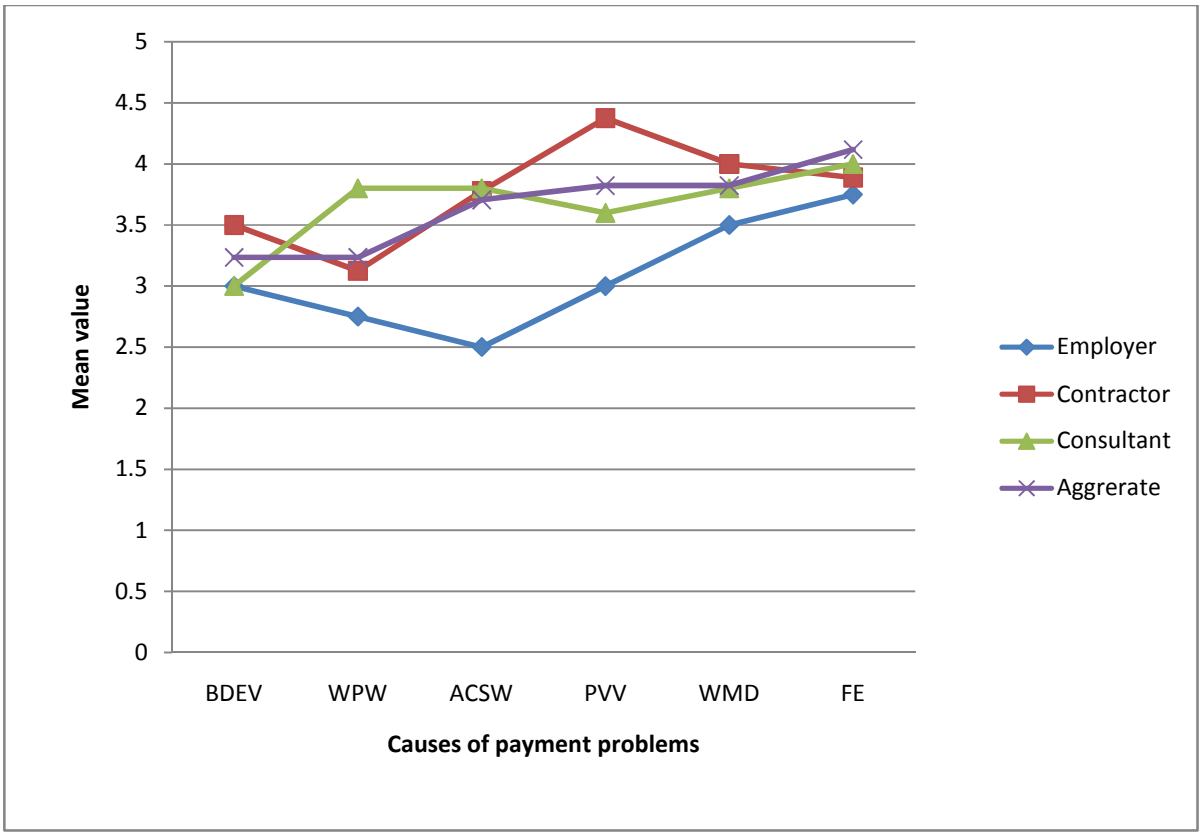
The result obtained from respondents shows that all the six causes outlined are common in public building construction project of the city as summarized on table 9 below. According to the respondents, among the six causes outlined; favoring the employer or bias is ranked first and problem in valuation of variations, weakness in making decision on issues arising in the course of construction are the most severe causes of payment problems in public building construction projects in the city.

Table 9: *Causes of construction payment problems from the consultant's side*

No	Causes of Payment problem contributed by the consultant	Mean value of ratings				Rank
		Emp.	Cont.	Cons.	Aggregate	
1	Problem in Valuation of variations	3.0	4.4	3.6	3.8	2
2	Favoring the employer (bias)	3.8	3.9	4.0	4.1	1
3	Absence of continuous supervision of the work under construction	2.5	3.8	3.8	3.7	3
4	Withholding payment certificates wrongly	2.8	3.1	3.8	3.2	4
5	Being dependent on the employer in valuing what is paid to the contractor	3.0	3.5	3.0	3.2	4
6	Weakness in making decisions on issues arising in the course of construction	3.5	4.0	3.8	3.8	2

The severity of the causes of payment problems that are contributed by the consultant are illustrated by figure 7 below starting from the lowest to the highest severe based on their aggregate mean value of rates given by respondents from the three target groups.

Figure 7: *Severity of causes of payment problems from the consultant's side*



Where;

BDEV: Being dependent on the employer in valuing what is paid to the contractor

WPW: Withholding payment certificates wrongly

ACSW: Absence of continuous supervision of the work under construction

PVV: Problem in Valuation of variations

WMD: Weakness in making decisions on issues arising in the course of construction

FE: Favoring the employer (bias)

4.7. CONSEQUENCES OF CONSTRUCTION PAYMENT PROBLEMS

The payment problems identified and discussed so far had their own impact on the projects under study. In the questionnaire designed for the study, five possible consequences of construction payment problems were listed and respondents were asked to give them ratings based on their occurrence in public building construction projects in Addis Ababa. Accordingly, the respondents have given ratings for those possible consequences of payment problems outlined, and the mean values of ratings are summarized under table10 below.

Table 10: *Consequences of payment problems*

No	Major consequences of the payment problems	Mean value of ratings							
		Emp.		Cont.		Cons.		Aggregate	
		Mean	Rank	Mean	rank	Mean	rank	Mean	Rank
1	Delay of project completion time	4.0	1	4.9	1	4.8	1	4.6	1
2	Project Cost overrun	3.0	3	4.6	2	4.8	1	4.3	2
3	Bankruptcy of contractors	3.0	3	3.9	4	4.6	2	4.1	3
4	Poor/Lower quality work	3.0	3	3.5	5	4.8	1	3.8	4
5	Dispute between the parties in the contract	3.3	2	4.4	3	4.2	3	4.1	3

The respondents' rank correlation for the consequences of the construction payment problems is shown in table 11 below.

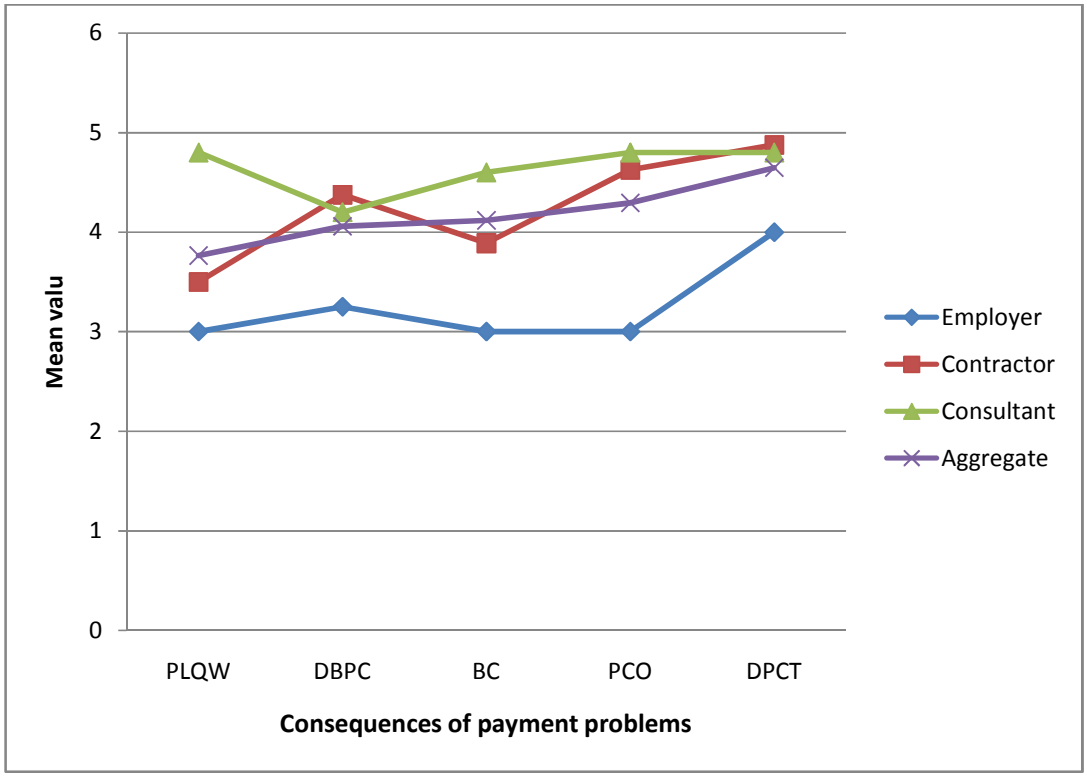
Table 11: *Coefficient of rank correlation of consequences of payment problems*

Responses	Spearman's coefficient of rank correlation
Employer-Contractor	0.65
Employer-Consultant	0.50
Contractor-Consultant	-0.05

As it is discussed in section 4.3 of this research the coefficient of correlation of ranks displayed on the table above indicates that there is a good relationship between the rankings of respondents though there is no relationship between consultant-contractor rankings since the rank correlation coefficient calculated is almost equal to zero. The correlation coefficient is near to zero because there is a significant difference between the rankings obtained from the two parties.

The severity of consequences of the payment problems in public building projects is illustrated in figure 8 below, based on their aggregate mean values from the lowest to the highest severe.

Figure 8 *Severity of consequences of payment problems*



Where;

PLQW: Poor/lower quality work

DBPC: Dispute between the parties in the contract

BC: Bankruptcy of contractors

PCO: Project cost overrun

DPCT: Delay of project completion time

CHAPTER FIVE

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis made and the results obtained from the survey, the following conclusions and recommendations are drawn.

5.1. CONCLUSIONS

1. The public building construction projects in this study are suffering from payment problems and this study identified that, payment delay is the most common among the three different problems examined.

2. Partial payment of sums due is the second most common problem in the selected public building construction projects in Addis Ababa.

3. Bureaucratic payment system of the employer, frequent variation orders and problem with the measurement and valuation process are the top three causes of payment problems in the selected public building construction projects in Addis Ababa, which are the employer's faults.

4. Failure to make regular progress, submitting a request exceeding the estimated cost of the executed work, the contractor's suspension of work, insufficient study and understanding of the contract documents are the major causes of payment problems in the projects under study, which are caused by the contractor.

5. Favoring the employer (bias), problem in valuation of variations, weakness in making decisions on issues arising in the course of construction, absence of continuous supervision of the work under construction are the top ranked causes of payment problems in the projects studied, which are caused by the consultant.

6. Bureaucratic payment system of the employer, the consultant's favoring the employer and the contractor's failure to make regular progress are found to be the top three causes of payment

problems. Frequent variation orders of the employer, the consultant's problem in valuation of variations and weakness in making decisions are also among the top ranked causes of payment the payment problems.

5.2. RECOMMENDATIONS

1. According to the findings of the study, the payment system of the employer is bureaucratic and it is the main contributory factor for the payment problems. Therefore the system must be examined for its compliance and investigation has to be made where the problem lies in the system, so that, it will be easy to devise solutions to alleviate the problem.

2. This study revealed that, consultants are not impartial in administering the contract and this is causing payment problems in the projects. But, why they are not impartial is not yet since it is beyond the scope of this study. Therefore, this must be studied thoroughly so that solution can be devised against the problem. And, awareness must be created in that professional ethics must be maintained from their part.

3. In this research, it is concluded that contractors usually include defective and unfinished works in their payment requests which has a negative impact on the process of checking and correction of quantities of work completed, which intern affects the timely issuance of payments. Therefore, final quantities of the works in a certain project has to be estimated by the certifying party from the outset, and this should be put as a template or master takeoff from which amounts of executed works could be obtained easily without the need for further detailed quantification and correction process as the work progresses.

4. In this research, consultants are observed to be not strong enough in making decision on issues arising in the course of construction, exercising their power in the contract. Whereas, what causes this problem in decision making is not addressed in this study and it needs further investigation. In addition to this, there should be a system of accountability for not making decisions on time and in accordance with the contract.

5. The research also pointed out that there is a problem from the consultant side in valuating variations and, there is a frequent variation order from the employer. Since these issues are dangerous and consistence has to be there, a study needs to be conducted on what causes them and how to minimize variation orders, so that, the problem could be resolved at its source.

6. Finally, this research made clear that there is a situation where the employer fails to finance the projects. Whereas, it is a must that sufficient budget has to be allocated for the projects from the outset. Therefore, further study needs to be conducted on why this financial constraint is happening after commencing new projects.

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APPENDIX

APPENDIX A: QUESTIONNAIRE



ADDIS ABABA UNIVERSITY
ADDIS ABABA INSTITUTE OF TECHNOLOGY
CIVIL ENGINEERING DEPARTMENT

A QUESTIONNAIRE

ON

PAYMENT ISSUES; THE CASE OF SELECTED PUBLIC BUILDING CONSTRUCTION PROJECTS IN ADDIS ABABA

BY

FISSEHA SHIMEKIT HAILU

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR A MASTERS DEGREE

IN

CIVIL ENGINEERING
[CONSTRUCTION TECHNOLOGY AND MANAGEMENT]

SUPERVISOR

EPHRAIM SENBETTA (PhD, P.E., LEED AP)

AAU, AAiT

OCTOBER, 2013

Introduction

The research titled ***Payment issues; The case of public building construction projects in Addis Ababa,*** will be conducted for the partial fulfillment of the requirements for Masters Degree in Construction Technology and Management. For the purpose of this research the term ***payment issues,*** includes construction payment matters in relation to interim payments, and it encompasses the areas of;

- Major payment problems in public building construction projects.
- Causes of payment problems in public building construction projects.
- Major consequences of the payment problems in public building construction projects.

Objective of the questionnaire

This questionnaire is designed to get your expert opinion on the research which will be conducted to identify the major payment issues in public building construction projects in Addis Ababa.

Instruction

Please read all the questions very carefully and give your honest and candid response for each. The information gathered from you will be kept strictly confidential and will be used for academic purpose only. All the data you provide will be used for the generalized analysis of the research and no organization or individual will be identified and mentioned in the process.

Don't forget that your honest response to all of the following questions is highly appreciated and it will contribute much to the research.

I thank you in advance for your kind cooperation and time!

Fisseha Shimekit Hailu
Cell phone: ***09 10 27 66 21***
E-mail: ***fisseha.shimekit@gmail.com***
Addis Ababa

Part I: General information

The following questions are designed to get general information about the organization and respondents of the questionnaire. So please, give appropriate response for each.

1. Name of the firm or organization_____.
2. How long has your organization been involved in public building Construction projects in Addis Ababa?
   - ☐ Less than 5 years
   - ☐ 6-10 years
   - ☐ More than 10 years
3. In how many of the public building construction projects in Addis Ababa has your firm been involved to date?
   - ☐ Less than 5 projects
   - ☐ 6-10 projects
   - ☐ More than 10 projects
4. What is your position/job title in the firm? State your experience in public building construction projects.

   _____.

   _____.

Your Telephone number: _____.

Your E-mail address: _____.

Part II: Basic information on payment issues in public building Construction Projects in Addis Ababa.

The questions below will be answered based on your level of agreement with the statement written on question number one. So please, show whether you disagree or agree with the statement by putting a tick (√) mark where it is appropriate in the box provided, before responding to any of the questions.

1. Construction payment is an issue in public building construction projects in Addis Ababa.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Unsure/Uncertain
   - ☐ Disagree
   - ☐ Strongly Disagree
2. If your response to the above statement is agreed or strongly agree answer the following questions. But, if you strongly disagree or disagree with the statement, please go directly to question number three only.
   2.1. What payment problems have you ever faced in public building construction projects in Addis Ababa?_____
   _____
   _____
   _____.
   2.2. What were the causes for the payment problem that you were confronted with?
   _____
   _____
   _____
   _____.
   2.3. What were the consequences of the payment problem on the project and in your work?
   _____
   _____
   _____
   _____.

2.4. What do you recommend to alleviate payment problems in public building construction projects in Addis Ababa?

_____

_____

_____

_____.

2.5. What do you often do whenever you face payment-related problems?

(Please tick (√) where it is appropriate, in the box provided)

☐ Suspend the work

☐ Making claims

☐ Going to court

☐ Doing nothing

☐ Others, (please specify).____

_____.

3. If you haven't ever encountered construction payment related problems in public building construction projects how did you avoided them?

_____

_____

_____

_____

_____

_____

_____

_____

_____.

Part III: Other payment issues in public building construction projects in Addis Ababa.

The following table consists of a list of statements identified from literature survey, concerning the different payment issues stated above. A 5-point scale is provided on the top right corner of the table. Based on your experience you are kindly requested to rate and show your level of agreement or disagreement for each statement given in the table by putting a tick (√) mark under each of your preferences.

[5]…….Strongly agree

[4]…….Agree

[3]…….Unsure/Uncertain

[2]…….Disagree

[1]…….Strongly disagree

PAYMENT ISSUES		STATEMENTS	LEVEL OF AGREEMENT				
			5	4	3	2	1
MAJOR PAYMENT PROBLEMS		Payment delay					
		Partial payment					
		None payment of sums due					
CAUSES OF PAYMENT PROBLEMS	*FROM THE CLIENT'S (EMPLOYER'S) SIDE*	Problem with the measurement and valuation process					
		Bureaucratic payment system of the employer					
		Lack of commitment of employees of the employer					
		Problem in understanding contract clauses					
		Common corrupt practices of employees of the employer					
		Suspending the work frequently					
		The employer's failure to finance the project					
		Frequent variation orders					
		Refusal to pay for materials stored on job site					
		Refusal to pay interest on late payment					
		Inadequacy of the conditions of contract used, on payment matters					
	FROM THE CONTRACTOR'S SIDE	Requesting payment for defective works					
		Failure to make regular progress					
		The contractors Suspension of work					
		Insolvency/bankruptcy of the contractor					
		Submitting a request exceeding the estimated cost of the executed work					
		Delivery of Poor quality materials to job site					
		Insufficient study and understanding of the contract documents.					
		Problem in understanding contract clauses					
		Disagreement in valuation of work completed					

	FROM THE CONSULTANT'S SIDE	Problem in Valuation of variations					
		Favoring the employer (bias)					
		Absence of continuous supervision of the work under construction					
		Withholding payment certificates wrongly					
		Being dependent on the employer in valuing what is paid to the contractor					
		Weakness in making decisions on issues arising in the course of construction					
MAJOR CONSEQUENCES OF THE PAYMENT PROBLEMS		Delay of project completion time					
		Project Cost overrun					
		Bankruptcy of contractors					
		Poor/Lower quality work					
		Dispute between the parties in the contract					

The end!

APPENDIX B: SPEARMAN TEST STATIC TABLE

n	.001	.005	.010	.025	.050	.100
4	—	—	—	—	.8000	.8000
5	—	—	.9000	.9000	.8000	.7000
6	—	.9429	.8857	.8286	.7714	.6000
7	.9643	.8929	.8571	.7450	.6786	.5357
8	.9286	.8571	.8095	.7143	.6190	.5000
9	.9000	.8167	.7667	.6833	.5833	.4667
10	.8667	.7818	.7333	.6364	.5515	.4424
11	.8364	.7545	.7000	.6091	.5273	.4182
12	.8182	.7273	.6713	.5804	.4965	.3986
13	.7912	.6978	.6429	.5549	.4780	.3791
14	.7670	.6747	.6220	.5341	.4593	.3626
15	.7464	.6536	.6000	.5179	.4429	.3500
16	.7265	.6324	.5824	.5000	.4265	.3382
17	.7083	.6152	.5637	.4853	.4118	.3260
18	.6904	.5975	.5480	.4716	.3994	.3148
19	.6737	.5825	.5333	.4579	.3895	.3070
20	.6586	.5684	.5203	.4451	.3789	.2977
21	.6455	.5545	.5078	.4351	.3688	.2909
22	.6318	.5426	.4963	.4241	.3597	.2829
23	.6186	.5306	.4852	.4150	.3518	.2767
24	.6070	.5200	.4748	.4061	.3435	.2704
25	.5962	.5100	.4654	.3977	.3362	.2646
26	.5856	.5002	.4564	.3894	.3299	.2588
27	.5757	.4915	.4481	.3822	.3236	.2540
28	.5660	.4828	.4401	.3749	.3175	.2490
29	.5567	.4744	.4320	.3685	.3113	.2443
30	.5479	.4665	.4251	.3620	.3059	.2400

(Source; Daryl S. Paulson 2003)