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Critical Causes and Consequences of Construction Project Interruption: Client, Contractor, Consultant and External Factors Standpoints

It should be pointed out that the dilemma of interruption and stoppage in the construction industry is a large-scale trend. Construction interruption and stoppage is considered one of the most recurring problems in the construction industry. Construction Interruption and stoppage is always measured as costly to all parties concerned in the projects and very often it will result in clash, claims, total desertion and much difficult for the feasibility and it slows the growth of construction sector. The objective of the research work that underpins this paper was to investigate the Factors and Consequences of construction projects on local contractors. A construction project is commonly acknowledged as successful when the aim of the project is achieved in terms of predetermined objectives that are mainly completed the project on time, within budget and specified quality in accordance with the specifications and to stakeholders' satisfaction. One of the most important problems that may arise in the construction project is delays and the magnitude of these delays varies considerably from project to project. According to delay categories that were contractor related, client related, consultant related, labour related and external related, the study revealed the six major effects of delay that were time overrun, cost overrun, dispute, arbitration, total abandonment, and litigation.

Keywords: *construction, project management, interruption, delay, contractor, cost, time, claims*

1. Introduction

Interruption and stoppage is a condition that occurs when the contractor fails to complete a project within the specified period according to the date that is agreed by both parties as stated in the contract. The construction interruption and

stoppage is a common apparent reality in all countries. Construction project interruption and stoppage could be defined as the time overrun either ahead of the contract date or further than the date that the parties agreed upon for delivery [1]. Construction interruption and stoppage is considered one of the most recurring problems in the construction industry. Construction projects can be delayed as a result of a large number of factors. Monthly payment difficulties from agencies, poor contractor management; material procurement, poor technical performances, and escalation of material prices have been identified as the main delay factors in Ghana [2]. Lack of contractor competency, poor designers and estimation, unfixed management problems related to site and procedural techniques have been identified as major causes of delay in Vietnam by [3,4]. In Kuwait, the financial difficulties, changing orders, insufficient experience of clients and contractors are the main delay factors.

Inadequate planning, scheduling and financing by contractor, and change orders by clients have been reported to be the main factors causing delay in Jordan [5]. Delays have an adverse impact on project success in terms of time, cost, quality and safety [6]. Construction stakeholders have to think about the nature of these problems by more analysis and studies [7]. The effects of construction interruption and stoppage however, are not confined to construction companies, but can influence the overall economy of a country, where construction plays a major role in its development and contributes 14% to the GDP. In most countries, local and foreigner investors attract people to own and invest in properties. This trend has resulted into the growth of population in a very short time and affected the GDP. Clients and investors are complaining of non receipt of their projects on time since interruption and stoppage take many years and gets on one of the most critical problem in most of the countries. Half of construction projects in the country encounter delays [8]. The number of construction projects encountering delay increased by about one fifth by 2009 [9]. Although the current global financial crisis that hit the world recently affected the rapid development in most countries, there is still a huge construction activity everywhere.

It should be noted that timely delivery of projects within budget and to the level of quality standard specified by the client is an index of successful project delivery [4]. Failure to achieve targeted time, budgeted cost and specified quality result in various unexpected negative effects on the projects. Normally, when the projects are delayed, they are either extended or accelerated and therefore, incur additional cost. The normal practices usually allow a percentage of the project cost as a contingency allowance in the contract price and this allowance is usually based on judgment [2, 8]. Although the contract parties agreed upon the extra time and cost associated with delay, in many cases there were problems between the owner and contractor as to whether the contractor was entitled to claim the extra cost. Therefore, construction project interruption and stoppage give rise to dissatisfaction to all the parties involved and the main role of the project manager is to make sure that the projects are completed within the budgeted time and cost [5, 7, 9]. This paper

intended to investigate the factors and consequences of construction, project interruption and stoppage.

2. Factors of Construction Project Interruption and Stoppage

Construction project management focuses on completion time of the projects, quality, and within the financial plan. Delays is one of the major problems in construction project which is defined as the excess time in completing the project as specified in the contract, or the commitments of the parties for the projects deliveries. Effects of delay are different for different type of parties. As for the owner side, a delay means loss of revenue due to late operation of the properties and unavailability of the amenities. To the contractor, delay causes increasing preliminaries costs, higher material costs, and due to increases of the labor cost. Delay can also lead to serious effect such as lawsuits between the owners and contractors or contract termination.

There are lots of researches which have been conducted in different countries with the result that delay problem is a familiar incident in the construction project, it is more serious in developing countries. According to many researchers, there are many causes of delay, in which, improper planning of projects by contractor is a main factor because they used so many insufficient estimations and assumptions. Causes of cost-time performance of public sector housing projects in Nigeria have been identified by Aibinu and Jagboro [10]. They classified the causes of delay were the project participants and external factors. Client related delays included variation orders, slow decision making and cash flow problem. For contractors factors of delays were identified as financial difficulties, material management problem, planning and scheduling problem, in adequate site inspection, equipment management problem and shortage of manpower. The external causes of delay are unpredictable weather, nature disasters and disputes.

According to Assaf and Al-Hejji [4], they identify 56 causes of project delays in Saudi large building construction projects and their relative importance. Based on the contractor's valuation, the causes of delays were delays in contractors progress, preparation and approval of shop drawings, payment by owner and design chances. Furthermore the major causes of delays from the point view of the consultant were the financial problems during construction stage, the slow decision making process of the owner and the correlation between contractor and subcontractor. There are many factors that can contribute to the causes of delays in construction projects. There are total of four groups of causes for delays in construction project. That will be explained according to factors by factors.

2.1 Cause of Delay Client Factor

There are many studies have been done to identified the causes of delay for client factor. Finance and payments of completed work, owner intervention, slow to make decision and impractical contract duration stated by owner that will

contribute to projects delay [11]. The delays to furnish and deliver the site to the contractor by the owner, late in revising and approving design documents, change orders by owner during construction, delay in approving shop drawing and sample materials, poor communication and coordination by owner and the other parties, conflict between joint-ownership of the project, slowness in decision making process by owner, suspension of work by owner, unavailability of incentives for contractor for finishing ahead of schedule,. All of these causes have contributed to causes of delays in construction project [4].

2.2 Cause of Delay Contractor Factors

The contractors delays factors are delays caused by the subcontractor, poor site management, improper planning and errors during construction, improper construction methods, and lack of contractor experience. The cause of delay based on contractor factors is conflicts in subcontractors schedule in execution of project, poor site management and supervision by contractors, poor communication and coordination by contractor and other parties, rework due to errors during construction, conflicts between contractor and other parties(consultant and owner), ineffective planning and scheduling of project by contractor, inefficient work by the subcontractor, poor qualification of contractor technical staff, improper construction methods implemented by the contractor, delays in subcontractor work, inadequate contractor work, and lastly is delay in site mobilization [12].

Poor qualification of contractors technical staff, difficulties in financing project, unqualified workforce, corruption, frequent change of subcontractors because of their inefficient work [13]. From the previous study that have been made, there are a lot of factor that contribute to the causes of delays in construction project. Many researchers have agreed that delay always happen because of the contractor such as inadequate contractor experience problem with subcontractors, ineffective planning and scheduling of project progress by contractors, mistakes during construction, delay in mobilization, communication problem with other parties, poor site management and supervision by contractor and lack of knowledge of contractors.

2.3 Cause of Delay Consultant Factors

Quality assurance and waiting time approval of test and inspection, contract management, preparation and approval of drawings, by the consultant are the major factors that contributed to delays [2,7]. The consultant delay causes is delay in performing inspection and testing by consultant, delay in approving major changes in the scope of work by consultant, inflexibility (rigidity) of consultant, poor coordination between consultant and other parties, late in reviewing and approving design document by consultant, conflict between consultant and design engineer and the last one is inadequate experience of consultant [4].

2.4 Cause of Delay Based on External Factors

The causes of delay on external factors is the security of the site, the warlords influence, corruption, natural disasters like flood and landslides, effect of subsurface condition(soil, high water table and etc), inclement of weather, unavailability of utilities in site, traffic control and restriction at job site, accident during construction, permit for foreign, building codes, bureaucracy in government agencies, changes in government regulations and laws and market inflation [14]. There are some factors are considered as external causes of delays in projects. This is primarily consists of poor, bad or unusual weather circumstances. These include rainy days and windy days. Other external factors are unforeseen site condition, equipment availability, quality of the material on site, shortage in material on site, supply of the labor, labor productivity, weather condition, unforeseen site condition,disputes and negotiation [15].

3. Effect of interruption and stoppage

3.1 Time Overrun

Time overrun mean that the contractor could not carry their work within the time of completions specified in the contract. In generally, time overrun can be divided into two group which include excusable delays and non excusable. Once the project counter time overrun, it will affect the progress of the work. Besides that, the fault party will take the full responsibility to compensate other parties for damages because of the projects delay. For instance, when the project almost completed, but suddenly because of bad weather the construction has to be stop. Therefore the contractor is entitle to claim the extension time and needed to reimburse liquated damages.

3.2 Cost Overrun

During construction stages, the client and contractor always confront with the cost overrun. Cost overrun is an unpredicted cost incurred in overload of a budgeted sum, due to financial underestimation. Cost overrun is linked to time overrun, if a project cannot be done in the specified time, it will also affect the financial cost of the projects. Usually, cost overrun always happens due to contractor own mistakes such as incorrect of cost estimate and contractor improper planning. Finally, the owner has to claim his losses and expense from the contractor interim fee [3, 8, 12].

3.3 Dispute

In private housing construction industry, some of project delays happen because of dispute between contractual parties such as client, contractor, consultants and other relevant parties/ those disputes because of client failure to

make payment to the contractor. Once dispute is happen, the relevant parties will consult through mediation. The mediator later will make a conclusion to solve the problem, but if the other party does not accept the decision made by mediator they can appeal the decision with an arbitrator. If both parties accept the decision making and the wrong parties will take full responsibility to compensate the damages for the projects interruption [5, 7, 14].

3.4 Arbitration

In current delay project, some of the contractual parties do not acknowledge the mediator decision and they can appeal in arbitration. Arbitrator will also make the decision to resolve the crisis, but if one of the parties does not accept the judgment made by the arbitrator, they still can appeal the decision through the litigation [4,6,7,9]

3.5 Litigation

In some private housing delay project, the relevant parties still do not agree with the arbitrator judgment. They appeal the result in litigation which is dispute resolution in the court. In litigation, the parties than will have to involve in trial either by a court alone or by the juries. If those parties are not pleased with the judgment again, then they can appeal a new trial again if they have by new evidence to proof their right, but once the parties accept with the judgment, the faulty parties need to take responsibility to pay the penalty [6,11]

3.6 Total Abandonment

Total abandonment means that the whole project stop immediately because of client facing difficulties. Some of the current project delays are totally abandoned because of client or contractor problem which include poor marketing and sales strategies, contractor run away, clients bankruptcy, and etc. The effect of project totally abandoned will affect many parties such as contractual parties which include client, consultant, contractor, sub-contractor, supplier and other related parties. Besides those parties, the purchaser will also suffer in cost damages due to project abandoned [6,12,15]

4. Methods of Minimizing Construction Delays

Methods of minimizing the construction delay id to have a frequent meeting, use up-to-date technology utilization, use a proper and modern construction equipment, use appropriate construction methods, make an effective strategic planning for the projects, have a proper material procurement, make an accurate initial cost estimates, clear the information and communication channels, make a frequent coordination between the parties involved, trying to do proper emphasis on past experience and lastly is a proper project planning and scheduling of the

construction project. The methods to minimizing the construction delays are divided into 3 groups, that is method for the client, contractor and consultant . The client should give more concentration to pay progress payment to the contractors on time as it weakens the contractors ability to finance the work, the client also have to minimize changes in order during construction so as to avoid delays and need to speed up reviewing and approving of design document. For contractor method of minimizing delay, they should improve the knowledge and skills of technical staff and try to manage the financial resources and plan cash flow by utilizing progress payment, the contractor also have to plan and scheduling the works form start of project and during the work to match with the resources and time to develop the work to avoid delays. To improve the delays cause by the consultant, they should avoid delays in reviewing and approving design documents, build up the knowledge and skills of technical staff and try to improve the coordination among the parties.

On the other hand, in order to decrease the interruption in huge construction project following particulars are very important. It is suggested that vendor must be give imbursement to contractor at time because it is liability of contractor to manage the economic record and due to which work growth is efficient. In orderto minimize project interruption in project diminish the change in drawing during the construction. It is necessary for contractor that by increasing number of labors productivity in construction increased.

For reducing interruption in project contractor must have knowledge about his resources strength and obtain up-to-date machinery, and try to obtain new equipment for construction. It is contractor liability that he must manage the capital resources throughout the project and use it appropriately because he doesn't countenance economic and cash flow problems. For reducing delay managerial and technical staff should be acquired for site management and supervision. It is necessary to include skilled and experienced workers in staff because of them the performance of work is improved. For completion of project it is necessary that client must be fait on contractor and consultant.

5. Conclusion

A construction project is commonly acknowledged as successful when the aim of the project is achieved in terms of predetermined objectives that are mainly completed the project on time, within budget and specified quality in accordance with the specifications and to stakeholders' satisfaction. One of the most important problems that may arise in the construction project is delays and the magnitude of these delays varies considerably from project to project. According to delay categories that were contractor related, client related, consultant related, labour related and external related, the study revealed the six major effects of delay that were time overrun, cost overrun, dispute, arbitration, total abandonment, and liti-

gation. In summary, this study summarized some causes and consequences behind the construction project interruption and proposes some recommendation, which might enable the client, contractor and consultant to develop in house competitiveness for the effective projects delivering and client's satisfaction within the stipulated time schedule.

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