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Abstract

In every project including construction projects the most important requirements include completion of the project on time and within the allocated budget. As construction projects are complex and depend on too many factors and stakeholders there are significant delays in project execution leading to cost overrun and extension of time for project completion. Delays in project are caused by various factors, which can be internal or external and can be caused by clients, contractors or government agencies. One of the factors, which is found to be leading to delay in projects or halting the projects is financial related factor. In financial related factor, late payment is found to be common among developing nations and it leads to various related issues in the project execution such as poor cash flow, insufficient financial resources and delays in subsequent processes. Late payment can be either due to lack of sufficient funds with client or contractor, incorrect evaluation of project and many other factors. Late payment in construction projects has affected several projects in Malaysia and Ghana and also led to related issues in the project. Late payment issue should be minimized or eliminated by making effective contractual agreement, involving all stakeholders to identify the right costing of project and making all parties aware of implications of late payments.

Introduction

Construction projects are increasingly complex as they are carried out in dynamic environments and have demanding time constraints (Assaf & Al-Hejji, 2006, p.350). Construction projects are complex as there are many interrelated activities, which are entirely different yet interdependent (Divya & Ramya, 2015). There are various aspects, which make construction projects complex. The aspects include construction work being carried out in a confined sit with difficulty in access to the resources and requires many trades to work at the same time in close proximity (Abdul-Rahman et al., 2009, p.226). Delay in construction project completion can be the greatest cause of extra cost and loss in financial return or other related benefits from the project. Many researchers have found various factors, which influence delays in the construction project. This research aims to identify the key factor, which affects the progress of the project and also leads to delays in projects.

Problem Statement

Success of construction projects depend on various interrelated factors, which influence the time and cost of the project. Delays in project can have a severe impact on the contractor as well as client in various aspects.

This can lead to overrun in cost and extension of time to complete the project.

Hypothesis

Delay in payments has direct impact on project progress and completion of the project.

Assumptions

- Payment have been agreed upon by the involved parties with the time schedule
- Prepaid payments and financial guarantee exists in the construction projects

Limitations and Delimitations

The research would consider analyzing the public projects and the contract type construction projects where there is price contract between contractor and the client
The delimitation in this research is the research focuses on the delays due to late payment and does not consider influence of project budget or process on delays in project.

Importance of the Research

Delays in construction projects have a severe negative impact on constructor and client's performance. It leads to cost overrun for both parties and can also affect their image. Payment delays is one of the key issue in several construction projects, which needs to be addressed to avoid halting projects or delaying the projects (Divya & Ramya, 2015). This research aims at analyzing the impact of payment delays on construction projects, which if avoided can help reducing or eliminating payment delays and can lead to on-time completion of project.

Literature Review

Construction projects include large number of different systems, which need to be put together with increased number of interfaces between various activities (Bramah, 2013, p.507). Construction projects require lot of details about every activity and require efficient controlling, coordination and monitoring of various tasks from start to finish (Assaf & Al-Hejji, 2006, p.349). Complexity in the project directly impacts the time, cost and quality. Due to increased complexity, delays are common in construction projects and is viewed as utmost priority in the projects as it can impact the relationship between the parties and cost of project can increase (Divya & Ramya, 2015).

There are different delay factors, which impact the project completion in different ways. The ten most important causes of delay in construction projects are lack of effective planning by the contractor, poor management of the site, lack of required experience of the contractor, inadequate financial resources with the client and delay in payments for completed work (Bramah, 2013, p.520). Shortage of material and labor supply, lack of availability of equipment and failure of equipment, lack of effective communication between parties and problems with subcontractor leads to delays in construction projects (Hamzah et al., 2011, p.491).

Delays refer to the time overrun beyond contract date or beyond the date, which the parties have agreed upon for project delivery. Arditit et al. (2000) state that delays in construction projects lead to serious issues, which can further impact the growth and development of construction industry and influence the overall economic condition of the region (Mahamid et al., 2012, p.303). Delay in construction projects thus, becomes costly for both the owner and contractor. Loss to the owner means loss of potential revenue and to contractor delay leads to increased overhead cost. According to Frimpong & Oluwoye (2003), most of the studies carried out to assess the causes of delays in construction projects highlight financial problem as one of the main causes of delays (Hamzah et al., 2011, p.493). The financial related problems causing project delays can be categorized in to late payment, poor cash flow management, financial market instability and insufficient financial resources (Assaf & Al-Hejji, 2006, p.351).

Late Payment

The late payment in construction projects occur due to poor financial and business management by the client (Assaf & Al-Hejji, 2006, p.351). The delay can be caused by the consultant in

valuation and certification of interim payment, insufficient information and documentation for valuation by the contractor, inaccuracy of valuation of work done and inability of the consultant to do evaluation of the different orders in time due to increased work load (Abdul-Rahman et al., 2009, p.227).

Poor cash flow management

In construction projects, effective cash flow management is essential for the respective parties to procure required raw materials for different tasks in the construction projects (Abdul-Rahman et al., 2009, p.228). The lack of effectiveness in cash flow management is caused due to various factors such as capital block, poor forecasting of regular cash flow, unstable financial condition of the contractor, contractor handling too many projects and directing the funds in different projects, which can lead to short of cash for some of the projects (Hamzah et al., 2011, p.494). The other reason for poor cash flow is the underbidding of project cost and the contractor not being able to arrange for the required expenses (Abdul-Rahman et al., 2009, p.228).

Insufficient financial resources

Construction projects require various raw materials from different suppliers and the supplies are required at different times during the project (Abdul-Rahman et al., 2009, p.229). Insufficient financial resources directly impact the completion of the project and lead to delays. The client and contractor need to ensure that required financial resources are available all the time as procurement in construction industry is done phase wise and hence the financial resources should be available as and when required (Alaghbari et al., 2007, p.196). The insufficiency in financial resources occurs due to difficulty in getting loan from the financiers or lack of allocation of government budget, if any.

Financial market instability

Along with the internal factors there are external factors, which can influence the completion of the projects. The instability in financial market can directly impact the construction projects as they need constant financial injections for the project to complete on time (Alaghbari et al., 2007, p.197). The instability in financial market can be due to increased interest rate for repayment of loan, inflation and increase in foreign exchange rate (Abdul-Rahman et al., 2009, p.232).

Financial related problems are found to directly impact the construction project completion time and in most of the situation result in delays. The factors are interrelated and lead to delays in project. When contractor delays the payment the cash flow problem increases, which then increases the extent of delays (Abdul-Rahman et al., 2009, p.235). If the cash flow management is poor then shortage of financial resources arises and impacts the processes leading to increase in extent of delays (Mahamid et al., 2012, p.305). The financial related issues, thus lead to increased delays in the construction projects. As construction industry has many stakeholders, the financial capabilities of every stakeholder have to be sound for the projects to begin and complete on time. The interdependency in construction industry increases the delays in projects due to financial-related issues.

Methodology

Research methods enable researcher to take a systematic approach to verify an identified hypothesis or solve a research problem (White & McBurney, 2012, p.44). Research method involves using appropriate techniques to collect required information with respect to the research issue or information, which helps in proving the hypothesis correct or invalid (Carley, 2014, p.47). There are two approaches to research, which are inductive and deductive. Inductive research method begins with observations and the theory is drawn at the end of the research (Passer, 2013, p.33). This research method does not assume any theory to begin with and hence the direction of the research can be changed or modified at any point of the research (Creswell, 2013, p.48). This research method enables researcher to develop abstract ideas through information gathered and analysis of the gathered data (Walliman, 2010, p.57). This research approach is explorative as the researcher attempts to determine the patterns from collected information and form new concepts about the topic under study (Passer, 2013, p.37). Deductive research method on the other hand is opposite to inductive approach wherein the hypothesis is first developed based on the existing theory and then research is designed to verify and prove the hypothesis right or wrong (Carley, 2014, p.53). This research method involves deducting conclusions from the already existing propositions and starts with expected pattern (Passer, 2013, p.36). The pattern is then evaluated based on the existing theories and previous researches. This research method explores a known phenomenon and involves testing of the phenomenon for its validity in a specific circumstance (White & McBurney, 2012, p.72). Researcher using the deductive research method takes a top down approach wherein hypothesis is drawn from existing theory and then it is tested using available information and data, which either adds to existing theory or contradicts the existing theory (Walliman, 2010, p.78). This research method begins with certain hypothesis and by the end of the research the researcher can end up developing a new hypothesis. In most of the situations the deductive research approach uses quantitative data collection approach, which emphasizes on cause and effect of social phenomena and considers data based on empirical observation and certain critical interpretation of collected data through observation (White & McBurney, 2012, p.77).

This research used deductive research method and involved verification of hypothesis that payment delay has direct effect on project progress and can also lead to delays in projects. This research study uses deductive research method as researcher does not have access to primary sources and the hypothesis verification has to be done on information collected from secondary sources. In some situations, deductive research method cannot make observations based on primary data and is mostly dependent on secondary data sources. The research involves assessing whether construction project delays are due to late payments by different stakeholders and determining it through primary sources is not feasible as the complexity and of the projects and the restriction on disclosing such data is high. The construction companies and the clients are not permitted to disclose such issues due to which this research has made observations based on the existing findings and theories and has attempted to verify the hypothesis developed by the researcher. The researcher has viewed the situation objectively and analyzed the different views and experiences of the key stakeholders of the construction projects. The research did not involve any interaction with any of the prospective participants but their opinions and experiences were presented through different information sources. The deductive research method is appropriate for this research as researcher has already developed the hypothesis highlighting that it has been observed in many situations that payment delays lead to delays in construction projects.

Analysis and Discussion

Construction industry is considered as the riskiest, challenging and dynamic businesses and the projects in this industry are quite complex as there are increased dependencies among the stakeholders and the resources (Abdul-Rahman et al., 2009, p.226). Delays is one of the common challenges in construction projects and the extent varies from one project to the other. In the context with respect to construction industry, delays can be referred to as time overruns either beyond stipulated completion date or beyond agreed date or contract period. According to Sambasivan and Soon (2007), delay in construction projects is very critical condition in the global dimension, which leads to increased cost of construction due to extension of time, disruption of work, loss of productivity, project abandonment and loss of revenue due to lawsuits between the parties having a contract.

Financial-related factors are considered to cause increased delays in construction projects. Sweis et al. (2007) highlight that in many regions financial difficulties faced by contractors lead to delay in the projects (Mahamid et al., 2012, p.306). The financial burden on the contractor at times increases due to several changes made by the clients in between the project, which directly increases the construction cost as they have to procure equipment and material beyond their capacity. Delay in payment to the contractors impacts the cash flow of the contractor, which can then lead to delay in the work and the overall project (Alaghbari et al., 2007, p.192). The researches have shown that delay in payment has resulted in slow progress of work on site. The financial difficulties faced by many sub-contractors and suppliers also lead to delays as due to lack of financial resources they cannot deliver the required material to the site (Ramabodu & Verster, 2010). The financial problems of clients, which include financial crunch, economic problems and lack of availability of funds for the respective project along with external condition such as currency and inflation rate affects the project delivery (Shah, 2016). The shortage of funding in between the project is found to be the most adverse financial related factors, which impacts the completion period of the construction project (Sambasivan & Soon, 2007, p.519).

Payment is considered to be one of the most important elements in construction industry. Late payment in construction projects causes various issues and leads to delay in the project. Late payment can be referred to as failure of a paymaster to pay the specified amount within the period of honoring of certificates provided in the contract (Mahamid et al., 2012, p.307). Delayed payment by any party involved in process of payment claim can influence the supply chain of payment in whole, which can impact the completion of the project (Ramabodu & Verster, 2010). Studies carried out in different contexts have highlighted that though delay in completion of construction projects exists at global level but it is more common in developing nations as compared to developed countries (Shah, 2016). The delays in construction projects among the developed nations are reported in Canada, Australia, the United states and Britain among other nations (Shah, 2016). According to De Souza (2009), delays in completion of infrastructural projects in Canada are attributed to factors such as reduced funding by sponsors, delayed disbursement of funds, tedious legislative procedures and poor site management by contractors (Ramabodu & Verster, 2010). In the United States, delays in projects are found due to labor supply and poor management of sub-contractors (Shah, 2016). Delays in construction projects in developing nations are reported in Malaysia, India, Indonesia, Ghana, Jordan, Kenya among many other nations (Shah, 2016). The main cause of delay in completion of the project in Malaysia is inconsistent flow of payments for completed work, which has led to poor site management and shortage of materials, equipment and labor on site (Sambasivan & Soon, 2007, p.520). The delay in projects in the construction projects in Ghana is due to payment delays, which lead to delays in material procurement as the material prices escalate, which then

requires the contractor an access to more money, which the client takes time to disburse (Mahamid et al., 2012, p.303).

Some of the studies highlight that delays in completion of infrastructural facilities in Kenya is associated with factors such as inadequate designs, poor management of the process of construction by contractors and most importantly poor financial management by government agencies (Shah, 2016). These factors are then associated with secondary factors, which include poor approach to procurement and management of materials and equipment by contractors, inadequate attention for stakeholder needs with respect to tools required to carry out the tasks and payment to the workers (Bramah, 2013, p.529). Sondu-Miriu hydropower (SMHP) was one of the project in Nairobi, Kenya, which was found to be delayed by four and a half years due to delays in release of required funds to carry out the projects, which in turn caused delay in management of other related issues such as unsatisfactory accountability of funds that was released in earlier phases and improper management of the funds by the stakeholders (Alaghbari et al., 2007, p.193). Thus, delay in payments should be considered to be a serious issue, which can have a severe impact on the project progress and cost. All the stakeholders have to be establish clear understanding about the payment flow and ensure that it is adhered to to finish the project on time and within the budget.

Conclusion

Construction projects are highly complex and involves many stakeholders and interrelated tasks as compared to other projects. The dependency of the tasks is very high and hence effective coordination among the different tasks is very essential to complete project on time and within the allocated budget. But it is found there are various factors, which influence the project process and lead to delays in the completion of the project. One of the main cause for delays in the project was found to be payment delays. The analysis highlights that the delays in payments does not affect one part of the project process but impacts other areas of the process such as it leads to poor cash flow, delays in procuring material, availability of labor when organization manages to get labor and loss of productivity, which can impact the financial condition of the contractor and the client in long run. At project level, increased involvement of all key stakeholders should be encouraged with respect to making decisions about payment terms and accountability in handling and managing funds by the respective officers and accounting officers. The parties should maintain proper contractual agreements and highlight the impact of the delays in payments in the contract, which should be agreed upon and understood by all parties so that the respective parties can make increased efforts in reducing payment delays.

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