World Journal of Engineering Research and Technology
WJERT
www.wjert.org
SJIF Impact Factor: 5.924

DELAY IN CONSTRUCTION PROJECTS DESCRIPTIVE STUDY

Amal Fares Al-Kharabsheh*

Article Received on 18/11/2021 **Article Revised on 08/12/2021** **Article Accepted on 28/12/2021**

***Corresponding Author**
Amal Fares Al-Kharabsheh

1.1 INTRODUCTION

Delays are of different types and researchers have their own criteria for evaluating and determining them. Delays have many causes that differ from one project to another, and the reasons are different and unique to each project. Efforts to reduce delays by mitigating or eliminating delays by expediting are measures that may or may be applicable in some cases and will depend on the projects being considered for these measures. Change is the main reason for the delay. If projects have no changes, projects will finish on time as there will be no disruptions or minor business downtime. Contractors also like to work on projects where designs are completed and there are no changes or disruptions. “In an ideal world, all construction projects would finish on time, with no changes or obstructions. Despite the prevailing public perception that contractors cannot wait for project changes to begin because that is where they areClaimed to "make their money", most contractors would prefer their projects to be completed without changes.” (Assaf and Al-Hejji ,2006).

However, while this is an ideal circumstance, revisions are inevitable in almost all high-volume projects because projects rarely begin after all drawings have been finalized and approved. It is critical that all key project stakeholders agree on how and by whom to deal with project modifications. This is in the best interests of the project as well as the owner and contractor. Constant strive for betterment necessitates the incorporation of changes, even if they may be disruptive. It's effective up to a point. However, after incorporating the adjustments and the joy of attaining a better end product, the entire outcome is likely to be better than the initial result, making alterations more acceptable than no changes at all. (Theodore and Trauner 2009).

The stage at which changes are recommended to be incorporated is critical since any big adjustments proposed when the project is nearing completion will complicate the business, disrupt the schedule, and most likely cause delays in completion. Adjustments will raise the project's cost because unsuccessful works, modifications, and changes will incur costs. Variable work complicates the project, promotes delays, and raises project costs - all of which irritate owners. (Al-Khalil and AL-Ghafly,1999).

1.2 Types of Project Delays

Delays in construction projects have been classified in many ways by various authors, although the fundamentals of most of these categories are very similar. Although different forms of delays have been used in various research, they are all related in some way. These classes are expounded on in the following arguments.

Most critically, as explained by Theodore and Trauner (2009), delays can be detected in these four primary categories;

1. Critical delays and Non critical delays.
2. Non Excusable (Contractor Caused) Delays & Excusable Delays.
3. Compensable (Owner Caused) Delay & Non-Compensable Delays.
4. Concurrent delay & Non concurrent delay.

Before assessing the impact of a delay on a project, it is necessary to identify whether the delay is critical or inconclusive. Furthermore, all delays are reasonable or unjustified. Delays, both reasonable and unreasonable, can be classified as synchronous or asynchronous. Delays can be classified as compensable or non-compensable.

1.2.1 Critical delays and Non critical delays

The relevance of the activities in the program can be used to examine delays. The core master program, which is designed in accordance with the contract terms, has a clear route. The crucial path is the network's longest path. When an activity on the critical path is delayed, it has an impact on subsequent activities and the project as a whole. These tasks are known as crucial activities, and it must be guaranteed that they are not delayed on the critical path.

When tasks in the critical path are delayed, the delay is reflected throughout the project. As a result, it is vital to assess the critical activities and determine whether the tasks may be re-sequenced for effective project management. "Construction of re-sequencing" Activities are a

key duty for project managers to perform in order to maintain good project control. Re-sequencing activities necessitates planners determining an activity's impact or "role" on succeeding activities. They must also determine the status of actions, i.e. whether or not they can be postponed" (Koo et al. 2007).

It is necessary to distinguish between the function and state of activities, which implies that planners must comprehend the logic and sequence of events. The Critical Path Method (CPM) picks activities based on time-criticality and defines the sequence of tasks based on the logic of precedence and linkages. As a result, for complicated and large projects, monitoring the logic and sequence of individual action is difficult and cannot be done manually. (Theodore and Trauner 2009).

The critical path directs the project's overall duration. However, there are rare instances of delays in activities that are not on the critical path and have a float. As the project advances, these previously non-critical actions become critical and become part of the project's new critical path. The problem of float usage is being debated. "Under current scheduling procedures, total float time is considered 'free,' and it does not belong exclusively to any one party in the construction Processing; rather, it belongs to the project and can be used by both owners and contractors to reduce the possible negative impact of delays." As a result, flotation is used on a "first-come, first-served" basis (De La Garza et al 2007).

Because of the protocol and the principle of "first come, first served" use of the float basis, any delay in the latter stages of the project will hold the party liable for that delay as well as the overall delay of the project. As a result of these circumstances, when project delays arise, the ownership and use of the pontoon has become a cause of contention.

The concept of float pre-allocation and management will be implemented in the project, which will use tables based on the critical path method. Furthermore, the concepts of pre-allocation and management for "complete flotation" must be contractually agreed upon, including accountability for any project delay guarantee. All parties must acknowledge that 100% flotation is a benefit to both.

Identifying and mitigating the risks associated with construction project delays is a serious problem for all key project stakeholders. Non-critical flotation consumption is a difficult and

contentious delay factor. While analyzing project schedule, duration, and cost delays. (Hemanta et al, 2012).

Project management using the critical route scheduling method has become a frequently used strategy. This programming table approach is also extensively used to request time extensions and analyze delays with impact programs, and it is needed by some contracts to demonstrate essential and non-critical operations after updating critical route method tables.

Owners will sometimes try to use the available float for non-critical tasks in order to maximize the advantage. "Owners will occasionally dedicate time to insignificant activities in order to enhance their own interests." In doing so, they run the danger of incurring Unexpected expenditures. If the contract contains an additional cost agreement, the owner is normally responsible for these additional expenditures. If the contract is a fixed-price arrangement, the contractor will bear the excess costs. In the latter situation, these expenditures may be justified by claims for delay or damage." (Householder, 1990).

The sharing of responsibility for any project delays between the owner and contractor is a significant factor in delay claims and their examination. The critical route technique is used to create a project program that includes both crucial and non-critical activities. It represents the total number of float times for each activity and the amount of time an activity can be postponed without compromising the project's completion date. The float's ownership is a difficult matter that can be settled by assigning liability to any or all parties and agreeing to its use. (Aibinu and Odeyinka, 2006).

1.2.2 Non Excusable (Contractor Caused) Delay

Any project delay that is primarily attributable to the contractor is considered unreasonable. The Contractor's obligation and accountability for the delay will be totally transferred to the Owner, who will have the right to recover any delays in the project in accordance with the contract's Terms and Conditions. In circumstances of contractor delays, the owner's claim is usually for penalty and/or liquidated damages. Landlords' claims for contractor delays often range from delays in starting work on site to failure in adequate coordination impacting business progress, inability to finish, timely arrange and purchase, and insufficient workforce to carry out works in accordance with business program. (Hemanta et al, 2012).

Delays occur on a wide range of projects, from simple building to major projects such as nuclear power plants. It is critical to classify the primary reasons of inexplicable delays and to emphasize the elements that contribute to those causes. Customer delays are compensable delays over which the customer has greater control and can take necessary action in a timely manner. Delays caused by the contractor are unreasonable or not compensable, and the contractor has greater authority and is expected to do whatever is necessary to avoid them. Although many research have been undertaken on the subject of these delays, it is crucial to highlight that no comprehensive study has been conducted to determine the causes of unexplained delays. Assist contractors in identifying and resolving issues that arise during the construction process. To aid in the identification of contributing components Due to time constraints, the Ishikawa chart or fish bone was employed as an analytical tool, and a categorization system was devised. According to a preliminary summary of the study's findings, "identifies materials-, equipment-, and work-related delays as primary drivers of delays in contractor performance." (Majid et al, 1998.).

There are new trends and unsatisfactory results in construction contracting that provide an assessment of the construction industry's challenges. This includes unknown site conditions, which are covered under the contract because the contractor visited the site and was aware of the site conditions. The importance of any built-in electricity or water lines that are not visible on the roof affects the contractor's risk and any delay caused by them. In accordance with the contract's terms and conditions, this is the contractor's sole and absolute duty. Consequential damages, whether in the form of compensation or a penalty, or both, will reduce the contractor's profit margins. (Amin,2005).

Some contaminated site restoration projects differ from regular building projects in several ways, including oversight relating to the authority's regulatory processes and a lack of knowledge on underground services and soil conditions. The planned management of the specific conditions may not be effective enough. The unusual characteristics of restorative projects imply that innovative tactics used by contractors may be more useful and successful. (Aibinu and Odeyinka, 2006).

1.2.3 Compensable (Owner Caused) Delay &Non-Compensable Delays.

In this case, the owner is liable for the time and money lost as a result of the delay. The contractor may allege that the owner has interfered with the work, or that the owner has failed to deliver equipment or supplies purchased by the owner at the job site as promised, or that

the owner's actions or refusal to act may create other delays. Although the owner cannot contract out of his need to pay for compensable delays, he may be able to minimize his liability for such delays. "Any clause in a construction contract that purports to waive, exempt, or void the contractor's, subcontractor's, or supplier's rights to compensation or equitable settlement." arising from unreasonable delay in performance caused by the Contractor's or persons acting on behalf of the Contractor's acts or omissions against public policy is void and unenforceable (cheng et al, 2005).

The most prevalent factor is a customer's request to modify an orderresponsible for project delays. The work that has already been completed is impacted by the issuance of a modification order. This necessitates fresh work as well as a file modification. Existing work and/or removal, work, and installation work in accordance with the change order. Delay must be proved through an examination of the impact on the critical path. The network will claim additional time and costs as a result of delays caused by adjustments.

Delays caused by inefficiency are another aspect that has come to light as a result of the adjustments. Because of the qualitative nature of inefficiency and the difficulties of linking the cause of lost production with harm, there is no clear way to assess it. As shown in (Serag et al , 2008). The data accessible from the contractors was the source of the information, and there appear to be disparities between the contractor's claims and the owner's rights. The research also focuses on the creation of a statistical model to estimate productivity loss from customer sources such as daily reports and graphics.

Change orders and specifications In addition, a model has been built to identify and validate productivity loss caused by modifications. (Aibinu and Odeyinka, 2006).

The client and the consultant are both involved in the nomination procedure, which is defined at the outset of the project. Where the entire scope of business has not been finished, customers are expected to complete the nominations of contractors for whom a preliminary amount has been allotted in the contract. During the nomination process, the client and consultant are involved in finalizing the scope of works, tenders, selections, and approvals, which can occasionally cause the nomination to be delayed.

Conventional construction purchases lack distinctive features and are best suited for projects with a well-defined scope of operation. Work progress is rational and sequential in such

techniques since each activity must be finished before the next one begins. Changes made after the commencement of the project and during construction cause complications and are costly. (Hemanta et al, 2012).

Inputs necessary for expert work in the design phase by specialist contractors will be highly advantageous for late nominations owing to late design completion. Contractors with specialized knowledge have the technical skills and know-how to contribute to the initial design and engineering phase. However, their involvement in the design process is rarely at an early stage, but this trend has also been seen. They evolve, and their involvement grows in the early stages of the project. Involving suppliers in product development and manufacturing efforts has proven to be quite successful." Early research findings that emphasized the contributions of expert contractors shown that increases in process efficiency and improvement are product quality. These contributions are distinguished by examples and suggested areas for improvement. It is becoming apparent that organizations are increasing the interaction between the designers and the subcontractors. (Amin, 2005).

Additionally, skilled subcontractors might be used to guarantee project delays are minimized. Specialized contractors with vast experience are among the challenges that can be anticipated and worked around by remembering that these problems do not speak. Project risk management necessitates assessments of the project's duration and the activity's vitality. However, the relationship between task durations might have a significant impact on ratings." (Yang, 2007) Flexibility in determining activity duration.

When practical data is unavailable and planners must rely on self-assessment, it is essential.

Choosing the proper contractor for the job is critical to ensuring you receive the best value for your money. "Construction clients are becoming increasingly conscious that choosing a contractor only on the basis of proposal pricing is extremely dangerous and may result in the project failing due to schedule delays and poor quality standards." As a result, evaluating contractors based on numerous factors is becoming more popular." (Singh and Tiong, 2005) Construction project delays are typical, and "the most prevalent reasons for the delays listed include "unexpected ground condition," "weather condition," "change by owner," "lack of technical personnel," "slow procurement of supplies and equipment," and "insufficient number." of equipment. (Zhao et al , 2007) For the causes for the delay factors, a three-dimensional model was used to examine the reasons for the delay. According to the

conclusion, the delay happens during a critical point of the construction process. The contractor and the customer are the parties accountable for the delays, as well as the primary parties affected by them. The general arrangement is provided. Useful advice for mitigating or preventing delays caused by the most prevalent contributors.

1.2.4 Concurrent delay & Non concurrent delay

In such instances, neither party is accountable to the other for any expenditures incurred as a result of the delay. These are the kind of delays that are typically mentioned in force majeure clauses: unusual weather, labor strikes, fate, acts of war, and so on.

Delays in the project are caused by the owner, for example, additions, alterations, alterations, changes to plans and requirements. Various site conditions and company suspension are examples of delays for which the Owner may be held accountable. Delays caused by the Contractor that occur during the same time period as the Owner are considered concurrent delays. "Delays considered would include those resulting from changes in plans or specifications, the occurrence of various conditions on the job site, suspension of work due to suspension of work initiated by the owner, and so-called "reasonable" delays, all when taking into account delays caused by the contractor." (Ponce de Leon , 1987).

The time frame of the project is the most significant consideration for the owner and contractor in any building project. However, numerous building projects have been shown to be delayed. "Delays can be caused by the owner (compensable delay), the contractor (unjustified delay), an act of God, or a third party (justified delay), or multiple types of delays can occur concurrently." Due to the numerous origins and reasons of construction delays, determining ultimate blame in delay claims is frequently challenging.".”(Zink, 1980).

Owner-caused delays are compensable delays that can be utilized by a contractor whose delays cannot be justified and who is accountable to the owner for further action.

A third sort of delay cannot be blamed on the owner or the contractor. These types of delays are known as force majeure, act of God, or third-party delay. When there is a delay in a project involving more than one entity, it is difficult to determine who is to blame. In such circumstances, analysis on the basis of From the fundamental work program specified in the planned schedule, compare it to the actual updated software, referred to as software ROM. What has to be reviewed in this analysis scenario is the suitable schedule, which can be done

by taking into account all of the allowable schedule alterations and what comes next. It can be concluded that it is a modified schedule that will allow the analysis of delay and acceleration. (Amin,2005)

Waddle (2008) discusses simultaneity of delay by pointing to a court case heard in Scotland's Outer House of the Session Court. Provide the judge the contractor has nine weeks of extra time as opposed to eleven weeks for a claim. In ruling on this, the judge determined that the delay in completion was the consequence of many factors, the majority of which were delayed instructions or amendments supplied by the architect And two of the causes were due to contractor mistake."

The judge ruled that it was unimportant to ascertain which party was late initially as long as both parties were late at the same time. It was determined that the delay was caused by both parties, and there was no basis for either party to be regarded the primary cause, and both parties failed to meet their obligation to finish the project on time. (Aibinu and Odeyinka, 2006)

1.3 Delay factor in construction project

Researchers in the field of project management in the building sector have discovered several reasons or delay factors. Some of these academics have even sought to classify the causes of delays based on specific criteria. These categories may include geographical information. As a result of the constraints, the wholesale method cannot be used. Perhaps this explains why there has been so much research into the causes of building project delays from various countries. Although there are some parallels amongst these outcomes, the discrepancies highlight the importance of their existence. This topic's geographical scope. As many studies and those who have attempted to categorize the reasons on the basis of those reported by stakeholders as being particularly widespread in nature have noticed, some of the causes are significant while others are secondary in Spread.

For decades, scientists have done several research on building project delays, since they have discovered numerous elements and combinations of factors that lead to delays. According to the available literature, the various factors are classified into groups of up to eleven (Al-Kharashi and Skitmore,2009) Categories related to consultants, contractors, design, equipment, abroad, work, materials, the owner, the project, engineers, and human behavior, among others (Amin,2005)and (Hemanta et al , 2012). However, this analysis regrouped

these characteristics into four (Alaghbari,2012) main categories: consultant- and contractor-related, client-related, and external factors.

1.3.1 Consulted related delay factors

The literature research was conducted using books, engineering journals, conference papers, master's and academic theses, the internet, and interviews with construction industry professionals to identify variables that cause delays in the delivery of building projects across the world. Several studies have found consultant-related variables to be the root cause of schedule delays. According to Aibinu and Odeyinka (2006), incomplete designs, late delivery of instructions, and insufficient monitoring all had a significant influence on the consultant-related category of delays. According to Al-Khalil and Al-Ghafly, (1999), the main cause of the delay was insufficient site supervision by the consultant. Delays in authorizing large revisions to the scope of work, insufficient expertise of the consultant, and late evaluation of design papers were noted as critical by Al-Kharashi and Skitmore (2009). In a second research,(Arditi et al.,1985) found design work delays and insufficient site inspection as the primary drivers of consultant-related delays.

Assaf and Hejji (2006) identified the consultant-related delay factors as follows: delay in performing inspection and testing by consultant, delay approving changes in the scope of work by consultant, inflexibility (rigidity) of consultant, poor communication and coordination between consultant and other parties, late review and approval of design documents by consultants, conflicts between consultant and design engineer, insufficient experience of consultant. Assaf et al. (1995) cited design flaws made by designers, changes in types and requirements during construction, and insufficient communication between owner and consultant throughout the design stage as important. Chan and Kumaraswamy (1997) discovered design information delays, insufficient design team expertise, and faults and contradictions in design documents.

Delays in design information, insufficient design team expertise, and inaccuracies and contradictions in design documents were all noted by Chan and Kumaraswamy (1997). El-Razek et al. (2008) stated in a second study that delays were caused by design changes during construction, changes in material types and specifications during construction, and design faults made by designers. Slow preparation and approval of drawings, incomplete drawings, specifications and technical paperwork, and changes in drawings were recognized as causes in consultant-related delays by Faridi and El-Sayegh (2006). Delays in executing inspection

and testing, poor communication and coordination with other parties, and conflicts between consultant and design engineer were highlighted as the most major causes of delays by Gündüz, et al., (2013) . Hemanta et al. (2012) determined that lack of commitment and the Architect's aversion to change contributed to delays in Indian building projects in a study assessing factors impacting delays.

In terms of technical hazards, Ling and Hoi (2006) looked at design failure, estimating mistake, and new technology failure as causal variables. The biggest source of consultant-related delays, according to Lo et al., (2006), is poor site administration and oversight. Poor contract management, inaccuracies and discrepancies in contract papers, and inspection and testing of completed portions of work were all cited by Mansfield et al., (1994) as major sources of consultant-related delays. Under consultant-related delays, Olawale and Sun (2010) listed insufficient project duration evaluation, errors in contract paperwork, and contract and specification interpretation conflict as sources of delay. Under the consultant-related categories, Sambasivan and Soon (2007) highlighted contract management, preparation and approval of drawings, quality assurance and control, and waiting time for approval of tests and inspections as reasons causing delays.

1.3.2Contractor related factors

According to the available literature, efficient project planning, the availability of materials, equipment, and sufficient labor are crucial success factors for the successful implementation of building construction projects. A number of studies have been conducted in those main crucial dimensions in order to determine their proportional contributions to construction schedule delays.

Financial challenges, equipment breakdown and maintenance problems, planning and scheduling problems, material and equipment shortages, slow mobilization, and human shortages are all major contributors to this group of delay factors, according to Aibinu and Odeyinka,(2006). Financing and cash flow issues, poor project management, and insufficient labor were all identified as major concerns by Al-Khalil and Al-Ghafly (2006). Inadequate contractor technical staff qualification, poor site management and oversight, and financial difficulties, according to Al-Kharashi and Skitmore (2009), were all major factors. The main causes of delay, according to Arditi et al., (1985), were a lack of materials and the contractor's financial problems. Contractor-related delay factors identified by Assaf and Al-Hejji (2006) include: difficulties in financing project by contractor, conflicts in sub-

contractors' schedules in project execution, rework due to errors during construction, conflicts between contractor and other parties (consultant and owner), poor site management and supervision by contractor, poor communication and coordination by contractor with other parties, ineffective planning and scheduling of project by contractor.

According to Assaf et al., (1995), inadequate contractor finance, a lack of staff, late material delivery, and faults made during construction activity all hampered project completion. Poor site management and supervision, as well as faulty project planning and scheduling, were recognized as contributing factors to delays by Chan and Kumaraswamy (1997). El-Razek et al. (2008) discovered that the main reasons of delays were the contractor's insufficient financial resources and the late delivery of goods. According to Faridi and El-Sayegh (2007), the primary causes of contractor-related delays include a lack of staff, poor site supervision and management, and the inability to obtain materials on schedule.

1.3.3 Client related delay factor

Several studies have found that owner-related delay factors cause timetable delays. Aibinu and Odeyinka (2006) found that the cash flow issues, variant orders, and sluggish decision making of clients were essential. In a separate study, (Al-Khalil and AL-Ghafly,1999) discovered that a lack of motivation for contractors to complete projects on time and delaying judgments from owners were critical. Al-Khalil and Al-Ghafly saw the client's failure to make progress payments as crucial. Al-Kharashi and Skitmore (2009) cited a lack of funds to complete the works and sluggish decision making by the owner as the main causes of delays.

Arditi et al. (1985) discovered that late payments to contractors and frequent change orders had the biggest impact. Arditi et al. discovered that late payments to contractors and frequent change orders had the biggest impact. Assaf and Al-Hejji (2006) identified the following owner-related delay factors: late progress payments by the owner, late furnishing and delivering the site to the contractor by the owner, change orders by the owner during construction, late revising and approving design documents by the owner, late approving shop drawings and sample materials, poor communication and coordination by the owner and other parties, slowness in decision making by the owner, conflicts between joint owners.

Assaf et al., (1995) identified intermitted work stoppage due to cash flow issues and delays in making progress payments to the contractor as the key culprits in this category. Client-initiated deviations, unrealistic contract durations enforced by the client, and slow decision-making speed were recognized as key by Chan and Kumaraswamy.(1997). Delays in

collecting payments to contractors and a delayed decision-making process were recognized as key causes of delays by El-Razek et al.,(2008). Slowness in the owner's decision-making process, as well as changes in material type and specification during construction by the owner, were highlighted as variables that contribute to causes of delay in this category by Faridi and El-Sayegh (2006). Gündüz et al.(2013) identified modification orders, site delivery delays, and decision-making sluggishness as the most significant contributors in this category.

1.3.4 External related delay factors

Several studies have highlighted external linked delay factors as one of the groupings of reasons of building project schedule delays. Aibinu and Odeyinka (2006) noted that price increases, inclement weather, labor disputes and strikes, government regulations, sluggish government permit, civil disturbances, and acts of God were all critical at the same time. Delays in acquiring work permissions from government were regarded as the most significant source of delay by (Aibinu and Odeyinka, 2006) in a separate study. Unfavorable weather conditions were recognized as the primary cause of externally linked delays by Arditi et al (1985). Assaf and Al-Hejji(2006) identified the external related delay factors as follows: effects of subsurface conditions (e.g., soil, high water table, etc.), delay in obtaining permits from municipality, hot weather effect on construction activities, rain effect on construction activities, unavailability of utilities on site (such as, water, electricity, telephone, etc.), effect of social and cultural factors, traffic control and restriction at job site, accident during construction, Assaf and Al-Hejji (2006) also noted legal battles and inadequate delay fines, a shortage of construction materials on the market, and a delay in manufacturing unique building materials as contributing contributors to delays.

Assaf et al., (1995) found the main cause of external-related delay as delays in manufacturing building supplies and delays in acquiring licenses from authorities. Unexpected ground conditions and a lengthy wait for drawing approval were noted as key issues by Chan and Kumaraswamy(1997). Unfavorable weather conditions were highlighted as a crucial factor by El-Razek et al., (2008). Subsurface soil characteristics and unfavorable weather conditions were recognized by Faridi and El-Sayegh (2006) as contributing factors to delays. The primary variables found by Gündüz et al. (2013) were permit delays, the global financial crisis, and unanticipated surface and subsurface conditions.

1.4 Impact of construction delay

Construction delays have a cascading effect on the contracting parties and the residents of an economy. Unlike the causes, which may have regional limitations, the impact is global in nature. Sambasivan and Soon (2007) prioritized the feedback from respondents in terms of the frequency of replies received for individual effects identified in their survey. All of the respondents chose time and expense overrun, giving it the highest ranking.

The cost that exceeds the expected project cost is referred to as a cost overrun. This additional expense is inconvenient for the construction project's participants. In the case of the government, taxpayers are not getting good value for money due to cost overruns. Similarly, contractors suffer from unusual losses and, at times, a cash flow problem. According to the consultants, it has left a stain on their reputation because clients have lost faith in their implementation strategy (nkado, 1995).

Another consequence of building delays is the complete cancellation of projects. Delays in construction projects may force the partners to abandon the project outright. If a building project is abandoned, it diminishes employment prospects, slows economic activity, costs the government money, and discourages foreign investors from supporting construction projects in the country. Aside from these, the reputation of the building contract's parties has suffered significantly**.**

CONCLUSION

Delays are unavoidable; nevertheless, they can be prevented or minimized by efficiently identifying and analyzing their causes. In conclusion, building project delays are a well-studied topic, with new studies being conducted on a regular basis. Because of the broad scope of construction projects in terms of size, kind, geography, and so on, there is still a need to examine the reasons and assess the impact of delays on diverse construction projects at various levels. This could eventually lead to much-needed industry development.

REFERENCES

1. Koo, B., Fischer, M., Kunz, J. Formalization of construction sequencing rationale and classification mechanism to support rapid generation of sequencing alternatives, 2007.
2. De La Garza, J.M., Prateapusanond, A., Ambani, N. Preallocation of total float in the application of a critical path method based construction contract, 2007.

3. Householder, Jerry L., Rutland, Hulan E. Who owns float? Journal of Construction Engineering and Management, 1990; 116(1): 130-133, (doi 10.1061/(ASCE)0733-9364(1990)116:1(130))
4. Majid MZA, McCaffer R. Factors of non-excusable delays that influence contractors' performance. JOURNAL OF MANAGEMENT IN ENGINEERING, 1998; 14(3): 42-49. Available from JRUL (Accessed 26 Dec 2008).
5. cheng, M.-Y., Tsai, M.-H., Xiao, Z.-W. Construction management process reengineering: Organizational human resource planning for multiple projects. Automation in 60046 112 construction ISSN 0926-5805, Elsevier, Amsterdam, 2005; 15(6): 785-799. [15 page(s) (article)] (21 ref.)
6. Serag E, Oloufa A, Malone L Change orders and productivity loss quantification using verifiable site data. JOURNAL OF PROFESSIONAL ISSUES IN ENGINEERING EDUCATION AND PRACTICE 2008; 134: 1.
7. Tung Yang Risk Modeling of Dependence among Project Task Durations Computer-Aided Civil and Infrastructure Engineering, 2007; 22(6): 419–429.
8. Singh, D., Tiong, R.L.K. A fuzzy decision framework for contractor selection. [Journal of Construction Engineering and Management, 2005; 131(62): (2005)].
9. Zhao ZY (Zhao, Zhen Yu), Liu R (Liu, Rui), Ning Q (Ning, Qing, Causes of delays in construction projects: A statistical analysis and model. PROCEEDINGS OF CRIOCM 2007 INTERNATIONAL RESEARCH SYMPOSIUM ON ADVANCEMENT OF CONSTRUCTION MANAGEMENT AND REAL ESTATE, 2007; 1(2): 944-952.
10. Ponce de Leon, Gui, Theories of Concurrent Delays. American Association of Cost Engineers. Transactions of the American Association of Cost Engineers. Morgantown, 1987; 6.1: 5.
11. Zink, Dwight A. Monitoring the Adequacy of the Amount and Productivity of Engineering and Construction Manpower. American Association of Cost Engineers. Transactions of the American Association of Cost Engineers. Morgantown, 1980.
12. Todd W Waddle. (2008) The Contractor's Role in Building Cost Reduction After Design (Bringing a Project Into Budget).Cost Engineering. Morgantown, 2008; 50.
13. Al-Kharashi, A., and Skitmore, M., Causes of delays in Saudi Arabian public sector construction projects, Journal of Construction Management and Economics, 2009; 27(1): 3–23.
14. Amin, M., Social science research, conception, methodology and analysis, Makerere University Prente, Kampala, Uganda, 2005.

15. Hemanta, D., Anil, S., Iyer, K. C., and Sameer, R, Analysing factors affecting delays in Indian construction projects, International journal of Project Management, 2012; 30(4): 479 – 489.
16. Wa'el Alaghbari. Factors Causing Delay in Construction Projects: Delay and Speed Factors of Construction Projects in Malaysia Paperback, 2012.
17. Aibinu, A. A., and Odeyinka, H. A., Construction delays and their causative factors in Nigeria, Journal of Construction Engineering and Management, 2006; 132: 667–677.
18. Al-Khalil, M. I., and AL-Ghafly, M., Important causes of delay in public utility projects in Saudi Arabia, Journal of ConstructionManagement and Economics, 1999; 17(5): 647 – 655.
19. Al-Kharashi, A., and Skitmore, M., Causes of delays in Saudi Arabian public sector construction projects, Journal of Construction Management and Economics, 2009; 27(1): 3–23.
20. Hemanta, D., Anil, S., Iyer, K. C., and Sameer, R., Analysing factors affecting delays in Indian construction projects, International journal of Project Management, 2012; 30(4): 479 –489.
21. Arditi, D., Akan, G. T., and Gurdamar, S., Reasons for delays in public projects in Turkey, Construction Management and Economics, 1985; 3: 171–181.
22. Assaf, S. A., and Al-Hejji, S., Causes of delay in large construction projects, International Journal of Project Management, 2006; 24(4): 349–357.
23. Assaf, S. A., Al-Khalil, M., and Al-Hazmi, M., Causes of delays in large building construction projects, Journal of Management in Engineering, 1995; 11: 45–50.
24. Chan, D. W. M., and Kumaraswamy, M. M., A comparative study of causes of time overruns in Hong Kong construction projects, International Journal of Project Management, 1997; 15(1): 55–63.
25. El-Razek, A. M. E., Bassioni, H. A., and Mobarak, A. M., Causes of delay in building construction projects in Egypt, Journal of Construction Engineering and Management, 2008; 134: 831–841.
26. Faridi, A. S., and El-Sayegh, S. M., Significant factors causing delay in the UAE construction industry, Journal of Construction Management and Economics, 2006; 24(11): 1167– 1176.
27. Kumaraswamy, M. M., and Chan, D. W. M, Contributors to construction delays,Journal of Construction Management and Economics, 1998; 16(1): 17–29.

28. Ling, F. Y. Y., and Hoi, L., Risks faced by Singapore firms when undertaking construction projects in India, International Journal of Project Management, 2006; 24(3): 261– 270.
29. Lo, T. Y., Fung, I. W. H., and Tung, K. C. F., Construction delays in Hong Kong civil engineering projects, Journal of Construction Engineering and Management, 2006; 132: 636– 649.
30. Mansfield, N. R., Ugwu, O. O., and Doran, T., Causes of delay and cost overruns in Nigerian construction projects, International Journal of Project Management, 1994; 12(4): 254– 260.
31. Olawale, Y. A., and Sun, M., Cost and time control of construction projects: inhibiting factors and mitigating measures in practice, Construction Management and Economics, 2010; 28(5): 509–526.
32. Sambasivan, M., and Soon, Y. W., Causes and effects of delays in Malaysian construction industry, International Journal of Project anagement, 2007; 25(5): 517–526.
33. Nkado, R. N., Construction time-influencing factors: the contractor's perspective, Journal of Construction Management and Economics, 1995; 13: 81–89.