

Causes of Final Account Closing Delay: A Theoretical Framework

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Abstract—Delay can be defined as time overrun or extension of time to complete the project. There are high possibilities that delay issues in final account closing cannot be avoided especially in construction project in Malaysia which is unique and dynamic in the terms of nature of design and technical skill. Delay in final account closing is a situation when the actual planning (time and budget allocation) of a construction project exceeds the planned schedule or on the other hand, final account closing exceeds the time and other provisions specified in the contract. The causes of delay discussed in this paper are appraised from the literature review. There are two main types of delay: excusable delay and non-excusable delay. The literature reviews on the delay in final account closing which is then translated into a theoretical framework are summarized in the context of construction players and academician perspective. It is anticipated that the finding reported in this paper could assist the planning of future strategies and guidelines of final account closing for the betterment of construction projects in Malaysia.

Keywords—Construction industry, construction contract, final account closing, delay.

I. INTRODUCTION

CONSTRUCTION industries are a growing industry in Malaysia. Fundamentally, construction activities are derived from the local economic activities in Malaysia. Construction of non-residential and residential buildings contributed between 40 to 55 percent of the total construction market between year 2006 and 2009 [1]. The market yields for building construction reached approximately RM7.21 billion in 2008 and RM6.67 billion in 2009, and it will potentially hit the RM9.00 billion mark by 2015 [1]. Delays are one of the biggest problems in construction firms face not only at the planning stage but include the post contract stage. Delays can lead to many negative effects such as lawsuits between owners and contractors, increased costs, loss of productivity and revenue as well as contract termination [2].

Failure to achieve targeted time, budgeted cost and specified quality result in various unexpected negative effects on the projects. Usually, when the projects are delayed, they are either extending the time and therefore, lead to the

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additional cost. The standard practices usually allow some percentages of the project cost as a contingency allowance in the contract price and this allowance is usually based on judgment. 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 is entitled to claim the extra cost that will show in the final account statement [3].

However, in parallel to these increasing developments in the construction industry, even though the practices and procedures today are vastly different from the old days, there are numerous criticisms as to the increasing number of the construction projects final account of which was settled unreasonably late or far beyond the period stipulated in the contract. In general practices, construction final account is tackled at the usually less pressing and less resourced post-completion stage, and has been often neglected or even treated by a simpler sense that the settlement of final account is just a matter of time or decision. Most of the standard forms of contract contain provisions upon which the construction players are obliged to settle the final account and issue a final payment certificate to the contractor within a specified period of time after the receipt of the contractor's final account statement. Even though it is clearly stated on standard forms of contract, delays in final account closing remain occurred.

Therefore, this paper aims in appraising the fundamental causes of delay which influence the successful closing of final account in construction projects. This paper would be a very fundamental reference in civil engineering education. This framework is significant since there are 30 percent of unsuccessful closing of final accounts in construction projects resulted from non-payment and defect liability period, non-systematic yearly budget, project hand-over failure, problematic audit report, dispute and arbitration [4]. On the other hand, final account closing success in construction projects is a certified statement of final cost which is effectively closed through systematic project administration procedures, where an on-time and within-budget construction is a major criterion of final account closing and construction project success as a whole [5]. Disclosures from this paper are significant in filling-in the gap in literature of final account closing characteristics in the civil engineering education and eventually assisting future strategies for successful closing of final account by achieving the aspirations of World Class Construction (WCC) management. It is important that general management keeps track of project progress to reduce the possibility of delay occurrence or identifies it at early stages [6].

II. FINAL ACCOUNT CLOSING IN CONSTRUCTION PROJECT

Construction projects generally comprise five stages: initiation/planning, design, tender, construction and final account/defect liability stage. The role and performance of project participants and contracting parties in a construction project in each stage influence the project success. Whilst many researches address construction projects performance by examining critical factors to the project success or failure, most of them focus on construction stage with little attention to final account stage or post-construction stage. Although the backlogs in the closing of final account have existed for decades where the important factors significantly affecting the closing of final account of construction projects have been identified since then, namely contractual-related, contractor-related and management-related, these factors usually attract less attention and priority by project participants and contracting parties. Undue protracted inaction makes the closing of final account more difficult and frequently leads to the emergence of unnecessary dispute [7].

The success of construction projects performance is affected by meeting customers' satisfaction and beneficial to stakeholders such as end-users [8], [9]. This is supported by Bititci (1994) who claims that client is satisfied when the project is delivered to quality, reliability, on-time delivery, high service levels and minimum cost of ownership [10]. Hence, the closing of final account is considered as satisfying the client if that final account is settled within the prescribed time frame. Since client satisfaction is an attribute of project success [11], Torbica and Stroh (2001) claim that the on-time project satisfaction by client can be considered as a successfully completed project in the long run [12]. However, the importance of the final account closing resolved in the stipulated time frame and agreed contract cost is always being neglected [6], [13]. Hence, despite completion within expected timeline, how can a project be considered as successful? What are the characteristics of successful and failed construction projects? Thus, it is important for this paper to determine the important variables that can clearly distinguish between on-time and delayed closing of final account projects affecting the on-time project completion, which can be used as the basis to develop the guidelines and framework to improve the closing of final account in construction projects.

Therefore, the importance of managing the final accounts effectively and efficiently should be one of the main agenda in a construction project. Pinto et al., (1990) identify three aspects of project performance as benchmarks for measuring the success or failure of a construction project: the implementation process, the perceived value of the project and client satisfaction with the delivered project [14].

III. CAUSE OF DELAY IN CONSTRUCTION PROJECT

Many studies were carried to figure out the main causes of construction delay such as Odeh and Battaineh (2002) who survey the most significant cause of delay in the traditional type of contract in perspective of contractor and consultant [15]. It is found that to imparting the economic feasibility of

capital project, extensive delays provide a fertile ground for costly deputies and claim. The result indicated that the contractor and consultant agreed that owner's interface, inadequate contractor experience, finance and payment, labor productivity, slow decision making, improper planning and subcontractor are among the top ten important factors of delay in construction project.

In Saudi Arabia, Assaf and Al-Hejji (2006) conduct a research about construction project delay including the final account closing within different types of project in the state. It was concluded that 70 percent of projects experience time overrun [16]. The survey was conducted on 23 contractors, 19 consultants and 15 clients. Seventy-three causes of delay was recognized and the causes were grouped into nine classes. The outcome of the survey showed that all the three parties agreed change order that the main cause of delay in construction project. The overall results also stated that the factor related to labor, contractor, project, owner and consultant were in the highest rank of causes of delay.

In Florida, Ahmed et al., (2003) identify the major causes of delay in construction industries which have contributed to the failure of final account closing [17]. The primary aim of this study is to identify the perception of the different parties regarding causes of delays, the allocation of responsibilities and the different types of delay. It was found that the consultants play a very important role in design-related delays because they are in charge of the design process in conjunction with the owner of the project. Furthermore delay in payments categories do not have the same negative impact on project completion times as other factors considered in this study such as code, design and construction related issues.

Odeh and Battaineh (2002) also conducted a survey aimed at identifying the most important causes of delays in construction projects with traditional type of contracts from the viewpoint of construction contractors and consultants [15]. Results of the survey indicated that contractors and consultants agreed that owner interference, inadequate contractor experience, financing and payments, labor productivity, slow decision making, improper planning, and subcontractors were among the top ten most important factors.

Assaf and Al-Hejji (2006) identified 56 main causes of delay in Saudi large building construction projects and their relative importance [16]. Based on the contractors surveyed the most important delay factors were: preparation and approval of shop drawings, delays in contractor's progress, payment by owners and design changes. From the view of the architects and engineers the cash problems during construction, the relationship between subcontractors and the slow decision making process of the owner were the main causes of delay. However, the owners agreed that the design errors, labor shortages and inadequate labor skills were important delay factors.

Sambasivan and Soon (2007) have also carried out a study about the cause of delay in Malaysia [3]. 150 respondents participated in the survey where this study has identified ten most important causes of delay from a list of 28 different causes and six different effects of delay. The ten most

important causes were contractor's improper planning, contractor's poor site management, inadequate contractor experience, inadequate client's finance and payments for completed work, problems with subcontractors, shortage in material, labor supply, equipment availability and failure, lack of communication between parties and mistakes during the construction stage.

Ko (2009) conducted a survey to determine and evaluate the relative importance of the significant factors causing delays in final account closing in Hong Kong construction projects [7]. They analyzed and ranked main reasons for delays and classified them into two groups the role of the parties in the local construction industry (clients, consultants or contractors) and the type of projects.

Based on the clarifications which have been given, some planning and strategies are needed to anticipate any problems that may occur from the beginning of the project, so that the on-site issue can be identified and mitigate in ensuring the project can be completed in accordance with stipulations in the contract. The logical questions at this point are: Why is it necessary to link the causes of delays and how can the link help the practitioners to prevent or remedy future delays in completion the project? Therefore, all parties involved must work together to ensure that delays in construction projects can be eliminated and in the meantime to ensure the final account closing can be resolved without any problems.

IV. AIM

The aim of this paper is to appraise the causes of delay in final account closing in construction project in order to develop the theoretical framework. The causes of delay in final account closing are collected from the literature review of previous international journal paper and conference paper. The information obtained is not only focused on the problems of the closing of final accounts but also includes causes resulting in the delay in completion and delivery of a project. This is because when the project is delayed, the final accounts cannot be closed.

V. DELAY CATEGORIZATION

There are three type of delay, namely non-excusable delays and excusable delays [2], [18], [19]. A non-excusable delay is delay caused by the contractor or his/her suppliers, with no fault by the owner. The contractor is generally not entitled to relief and must either make up the lost time through acceleration of time or compensation to the client. Therefore, non-excusable delays usually result in no additional money and no additional time being granted to the contractors, which are shown in Fig. 1.

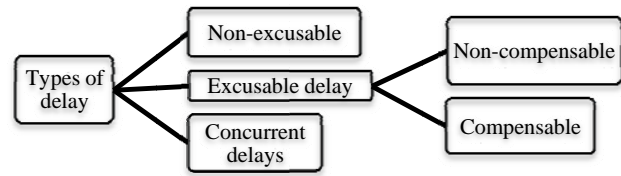


Fig. 1 Categories of construction delays

Excusable delays are divided into two: compensable and non-compensable delays. Compensable delays are caused by the owner or the owner's agents. An example of an excusable delay with compensation would be when an owner denies access to the site once the notice to proceed is given. This delay is because come sometime unexpected situation and it not from mistake of the contractor. The external factor is something hard to make sure because it refer to the future and event.

On the other hands, non-compensable delays are caused by third parties or incidents beyond the control of both the owner and the contractor. An example of an excusable delay with compensation would be when protest from the workers, unexpected whether, unexpected of late delivery equipment and unexpected of late delivery material. These delays are commonly called "acts of God" because they are not the responsibility or fault of any particular party [2], [20].

Alaghbari et al., (2007) have added another type of delay called concurrent delays [20]. If there is only one factor delaying the construction project, it is usually quite easy to calculate both the loss of time and money resulting from that single issue. However, concurrent delay is more complicated and this is very common in construction project. This situation happens when more than one factor delays the project at the same time or in overlapping periods of moment.

The issue of delay may occur due to errors in the client, consultants, contractors or subcontractors, probably also due to the difficulty in obtaining materials, labor or supplier. Fig. 2 shows a summary of the categories of construction contract delays.

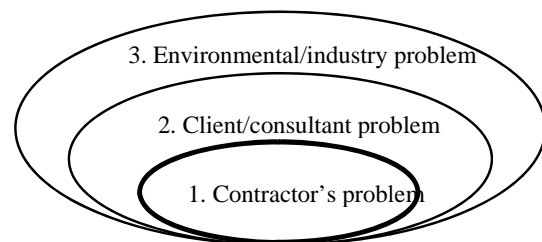


Fig. 2 Problem causing delay in construction projects [21]

VI. FACTORS AFFECTING FINAL ACCOUNT CLOSING SUCCESS IN CONSTRUCTION PROJECT

In general practices, construction final account is tackled at the less pressing and resourced post-completion stage, which is observed by this study as being often neglected or even treated by a simpler sense as a matter of time or decision [22]. However, reference materials related final account in construction industry is very limited and does not focus directly on the final account closing.

A first perspective is through the examination of the "underlying factors" which are principal determinant as to the closing of final account project. These factors are originated from the fundamental aspects like measurements and rates of most construction contracts and, more importantly, the claims and disputes which are inevitable in construction projects [23]. Each of the variables is to be dealt with in accordance with the complicated contractual provisions prior to reaching an agreement with the contract administrator [24], [25].

Second perspective through the examination of "other potential factors" that are external factors extrinsic to the final account project, like organizational culture, resource or skill and experience of the contractors quantity surveyors/ construction personnel involved in the preparation, and agreement, of the final account. These factors have no contractual relationship with any scope of the final account but, because of its critical effect to the project performance and project success, the final account process may be delayed and undermined by the significant impact of such potential factors [7].

Nevertheless, the next paragraph will explain in more detail about underlying factors and other potential factors which will influence the success of final account closing in construction project.

A. Underlying Factors Affecting Final Account Closing

The constituent parts of the final account of construction projects in Malaysia are usually indicated in and governed by the contract of the respective project, which are subject to the contract arrangement, and are construed as project scope variables [26]. These constituent parts dominate the process of completion of final account and therefore are addressed automatically by the parties when the time to proceeding with the final account clocks in. Normally, the common contract for construction project in Malaysia is Lump Sum Contract, Re-Measurement Contract and Design and Built Contract.

In summary, the variables identified on the previously literature review are considered as the dominant causes of delay to the preparation and closing of final account in particular in construction projects. A tabulated summary with reference of the published literature is presented in Table I.

TABLE I
SUMMARY OF UNDERLYING FACTORS AFFECTING FINAL ACCOUNT CLOSING [7]

Observed Variables	
1	Variations
2	Measurements
3	Claims – Delay / EOT; Cost /Additional Payment
4	Documentation and Records

B. Other Potential Factors that might Affect Final Account Closing (The Non-Scope Factors)

In addition to the intrinsic dominant factors that addressed the constituent parts of the final account project which are governed by contractual provisions, there are other potential factors which might cause harmful effect to the performance and outcome of construction project and might also have influence directly or indirectly to the preparation and closing of the final account [7]. Such other potential factors are extrinsic to the final account itself and the appropriateness and applicability of these potential factors to the final account closing depend on the findings obtained from literature review and the opinions and verification offered by the fellow practitioners in the pilot study. According to the studies of *non-scope factors* by Chan and Kumaraswamy (1995), Kala and Price (1991) and Bromilow et al., (1988), and the observations from other previous investigations, the *non-scope variables* identified from the literature review which are considered to be important factors affecting the final account closing are contactors sub-contracting; resources allocated by the contract administrator to the final account project; resources allocated by the contractor to the final account project; involvement of claims consultant in the final account by the contractor; contract administrator process of assessment and/or agreement; contractors organizational approaches to the final account closing; contractors top management support; work load of the contractors employer involved in final account project and amount of outstanding works/extra works in the maintenance period [27].

Construction management problems are multi-faceted. Review of the literature indicates that the other potential factors critical to the final account closing satisfaction contain seven categories. Table II below shows the summary of variables identified from the other potential factors affecting project success and the final account closing.

TABLE II
SUMMARY OF OTHER POTENTIAL FACTORS AFFECTING FINAL ACCOUNT CLOSING SUCCESS [7]

Observed Variables	
1	Contractor Sub-contracting (including settlement of payment)
2	Contractors organizational approaches
3	Contractors employment of consultant
4	Contract administrator and contractors resources allocated to the final account
5	Contract administrator process of assessment/ agreement
6	Contractors top management support
7	Works load of contractors staff in final account project stage

VII. FRAMEWORK OF DELAY

Limited frameworks on delay in relation with construction project around the globe are developed. Therefore, as per discussion in previously paragraph, delay in construction project can be also categorized as one of the factors influencing the delay in final account closing. For instance, Assaf and Al-Hejji (2006) group the factors to a few categories in the construction field [16]. Non-efficient responsibility was rated among the delay caused by parties

that involved in construction project ranging from the client, contractor and consultant despite other external factor namely project, materials, labors and equipment. The result of the study is as follows: (1) financial difficulties and economic problems, (2) financial problems, (3) late supervision and their slowness in making decision, (4) contract administrator or representative slow in give instructions, (5) difficulty in getting materials on market, (6) poor site management and record, (7) materials shortages on site, (8) construction mistakes and defective work, (9) delay in delivery of materials to site, and (10) slowness in making decisions.

In 2003, Ahmed *et al.*, (2003) grouped the cause of delay into responsibility and type of delay [17]. The result of the study is ranked from number one to number ten as follows: building permits approval, change order, changes in drawings, incomplete documents, inspections, changes in specifications, decision during development stage, shop drawings approval, design development and changes laws and regulations.

On the other hand, Alaghbari *et. al* (2007) proposed the significant factor causing delay of building construction project in Malaysia [20]. The study grouped the cause of delay into responsibility of contractor, client, consultant and external factor. The results from the study show that contractor's improper planning is the most significant factor causing delay in construction project, followed by contractor's poor site management, inadequate contractor experience, inadequate client's finance and payments for completed work as well as the problems with subcontractors. Other factors include, shortage in material, labor supply, equipment availability and failure, lack of communication between parties and mistakes during the construction stage. The issues raised above contributed to the delay in the closing of final account in construction project.

In Malaysia, the delay in the closing of final account in construction projects caused mainly due to the ignorance of contract administrator in rationalising the rates on time, dispute when the work price changes/variation orders are not kept properly, lack of communication between parties due to non-functional contract administrator [3], unethical behaviour of client's employees by purposely delaying the closing process with intention of obtaining "gifts" from the contractor [28], unfair conduct, conflict of interest, collusion, fraud and bribery [29]. The failure in closing the final account on time has consequently led to loss of reputation, trade credit constraints, reduced credit ratings [30]-[32], representation of additional cost, opportunity loss of contractors in getting other projects and increment of bankruptcy among contractors [33]-[38]. Hence, failure in closing the final account demonstrates the organisation's failure in managing the project well as specified in the contract [39].

VIII. CONCLUSION

For many years, the issue of delay in final account closing in Malaysia construction projects has been recorded as unsatisfactory phenomenal. Its impacts were so significant that it tends to decelerate the implementation of Malaysia Plans. The improvement of delay factors not only limited to technical

factors, but also factors in project management perspective, both from the aspect of processes involved and the influence of human attitudes, mentality, skills and behavior. With that spirit, study based on the same issue and problems but looking from a different perspective has been conducted where eventually, a delay framework has been proposed as in Fig. 3.

The depth studies as to what extent these factors and variables can positively and negatively affect the construction project are suggested for future study. The reliability and criticality of framework was validated by the expert group. The expert focus group involved a minimum of five experts of fellow construction players experienced in the area of contract administration and management of construction projects. Therefore, in order to improving the closing of final account in construction projects, the issues raised in this paper need to be appropriately addressed.

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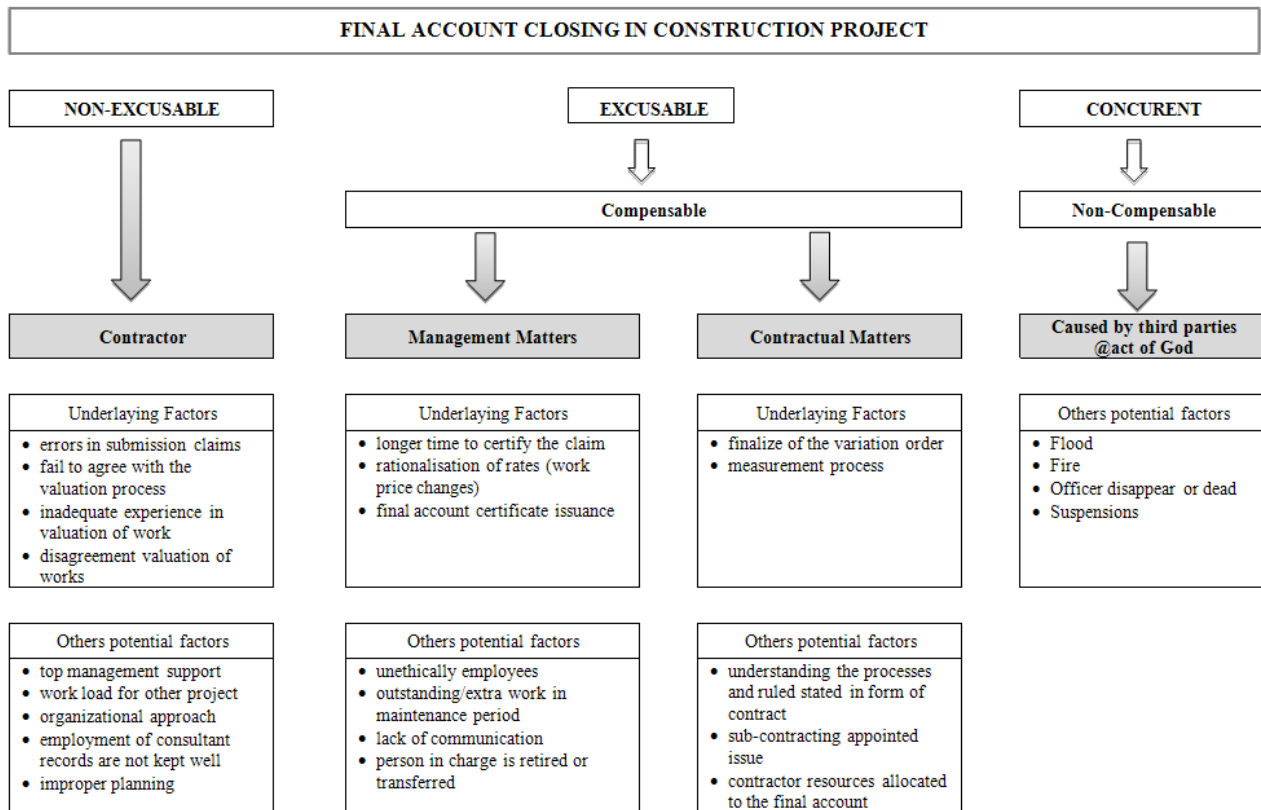


Fig. 3 Final account closing delay theoretical framework

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