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The effectiveness of Microsoft Project in assessing extension of time under PAM 2006 standard form of contract

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Abstract. Time is equal to money; and it is applies in the construction industry where time is very important. Most of the standard form of contracts provide contractual clauses to ascertain time and money related to the scenarios while Extension of Time (EOT) is one of them. Under circumstance and delays, contractor is allow to apply EOT in order to complete the works on a later completion date without Liquidated Damages (LD) imposed to the claimant. However, both claimants and assessors encountered problems in assessing the EOT. The aim of this research is to recommend the usage of Microsoft Project as a tool in assessing EOT associated with the standard form of contract, PAM 2006. A quantitative method is applied towards the respondents that consisted of architects and quantity surveyors (QS) in order to collect data on challenges in assessing EOT claims and the effectiveness of Microsoft Project as a tool. The finding of this research highlighted that Microsoft Project can serve as a basis to perform EOT tasks as this software can be used as a data bank to store handy information which crucial for preparing and evaluating EOT.

1. Introduction

Delays are common yet severe issues encountered by professions in the construction industry around the globe. Delays can be defined as a time period which exceeds the completion date stated in the contract initially [1].

Unfortunately, most of the standard form of contracts fail to deliver clear and precise outline on the preparations and assessment of Extension of Time (EOT) application[2]. As in PAM (Pertubuhan Arkitek Malaysia) Contract 2006 (With Quantities), provisions of EOT are given under Clause 23 whereby details and information regarding to EOT are stated such as submission of notice and particulars for EOT by the contractors (Clause 23.1), time period given to contractor to submit claims and architect to response to contractor's claim as well as "Relevant Events" that lead to delays in project (Clause 23.8). PAM 2006 Contract does not include standard guideline for the Architect or contract administrators to access EOT claims by the contractors[3]. Furthermore, there is no specific methods and procedures in preparing EOT claims stated for the contractors in the said PAM Contract 2006.

Hence, it fails to provide a fair basis for Architect and contract administrators to access EOT claims, instead, these claims are evaluated according to knowledge, practices, opinions and personal perspectives of the Architect and contract administrators. The absence of clear guideline has in fact induces vast number of issues while handling EOT application when contractors are not aware of the



documents and supporting details required to claim for EOT effectively. Even if the contractors realize the type and extent of documents needed, they still fail to trace back the site records and submit the claim in time.

On the other hand, the utilization of project management software applications ease the management of the project by tracking and managing the records, data, critical path, schedules and plans; and other information [4]. Microsoft Project is one of the project management software tools available in the market and its useful features are somehow related to EOT and able to solve some of the issues. The main feature of Microsoft Project is acting as a record keeper, information such as project duration, on site progress, delays anticipated, resources, budget and other useful information are stored in the software and they can be traced and retrieved easily for contractual claims such as extension of time application.

2. Extension of Time (EOT) in PAM2006 standard form of contract

Delays are not favoured by parties involving in the construction projects including clients, stakeholders, architects, engineers, builders, contractors and other professions even labours. It is because delays are indirectly lead to overrun of time, budget, determination of contracts, abandonment of works and disputes [5]. At the same time, completion date stated in the contract does not solely represent the date when the contractor should complete the works, it also serves as a basis and provide rights to the employer to impose liquidated damages to the contractor upon non-completion works after the completion date [6].

According to Royal Institution of Chartered Surveyors (RICS) of United Kingdom, extension of time (EOT) is defined as additional timeframe provided for the contractor to complete his works after the stated completion date in the contract while the liquidated damages are not imposed to the contractor. However, the EOT will only be granted for the contractor under certain circumstances and delays.

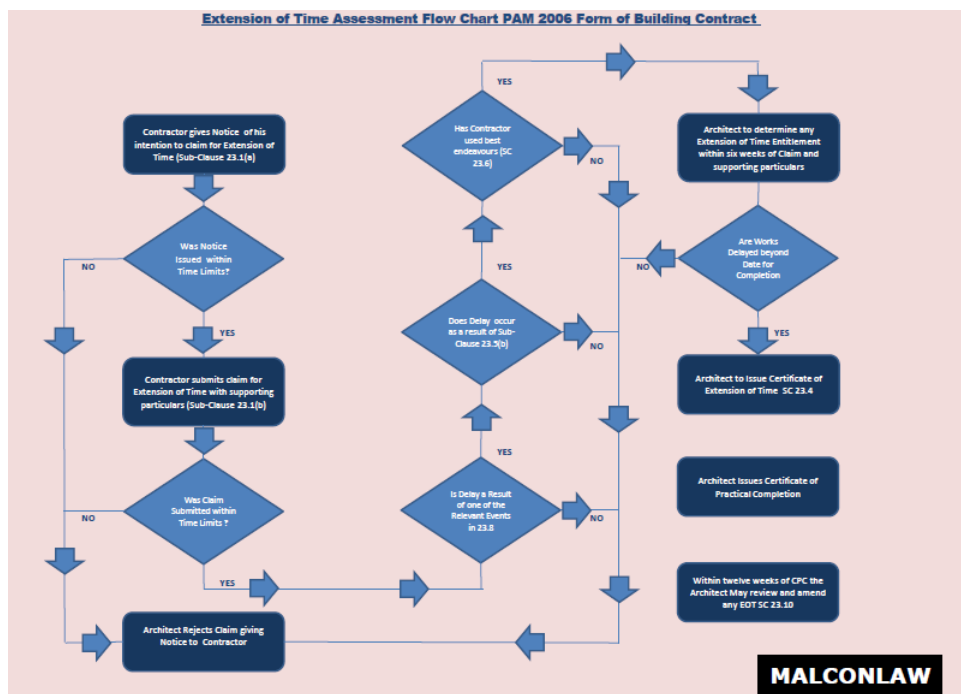


Figure 1. Extension of time assessment flow chart PAM 2006 form of building contract [7].

2.1. Current practice of EOT assessment

In the construction industry, the assessment of extension of time claims will be assisted with various type of delays analysis techniques. According to D.Aditi[8], there are five commonly used delay analysis techniques, as the followings:

Table 1. The delay analysis techniques.

Techniques	Descriptions
As-Planned vs. As-Built	<ul style="list-style-type: none"> • An observational technique that compares the baseline or other planned programme to the as built programme[9] and among the preferable delay analysis method used [3]. • Does not scrutinize delay types and this makes it easy for it to be manipulated and distorted to reflect either the position of the claimant and defendant [2].
Impacted As-Planned	<ul style="list-style-type: none"> • A method that measures the impact of the delays on the contractor's as-planned Critical Path Method (CPM) schedule, which can be used for analysis of delay during and after project completion. However, the original baseline programme may not be a realistic model on which to base the whole analysis and it has the potential of failing and lead to disputes [2].
Collapse As-Built	<ul style="list-style-type: none"> • This technique consists of limitation as well. Similar with Impacted As-Planned technique, Collapse As-Built only emphasize on employer-caused delays while contractor-caused delays are excluded, hence, concurrent delays are not considered. • It has limitation which does not consider the dynamic nature of the project's critical paths and highly subjective to manipulation [9].
Window Analysis	<ul style="list-style-type: none"> • It is a dynamic delay analysis method that performed by using extracted schedule windows [9]. • However, it is time consuming and costly to operate and demands complete project records which often not available [2].
Time Impact Analysis	<ul style="list-style-type: none"> • A technique that requires huge amount of information to be implemented and the as-planned schedule has to be prepared in critical path method (CPM) format andcausing the results to be inaccurate sometimes. • Not practical or realistic to use if there are an overwhelming number of delay causing event, the analysis requires intensive effort and time consuming [2].

2.2. Problems and challenges associating EOT claims

EOT is equally important for all contracting parties, which to contractors a successful claim for EOT would absolve them from having to pay liquidated damages and to complete the project within the extended period; and to the employer, it would prevent time from being rendered at large [10].

Although there are provisions given in the standard form of contracts including PAM Contract 2006, however, disputes still occur commonly when dealing with extension of time issues. One of the main problems arise from the standard form of contract itself [3]. The issues associated with EOT claims also include the insufficient details submitted by the contractor in EOT claims, late submission of the claim and the failure of the claimants to collect relevant evidences on site. Table 2 shows the challenges and problems that associated with the EOT claims.

Table 2. Problems and challenges associated with EOT claims.

Problems/ Challenges	Descriptions
Flaws in PAM2006 standard form of contract	<ul style="list-style-type: none"> • Absence of clear guidelines regarding the procedure of claiming and assessing EOT in the standard form of contract, as well as PAM 2006 Contract and it will lead to disputes[3],[11]. • Inexistence of agreed basis of EOT claiming and assessing procedures between contractor and the Architect/ contract administrator [10]. • Improprate delay analysis methods.
Poor EOT claims' submission	<ul style="list-style-type: none"> • Failure in delays identification by contractor in order to provide sufficient supporting particulars[3], [12].
Late EOT claims' submission	<ul style="list-style-type: none"> • Contractor failed to submit the EOT claim on time due to the time consuming process of compiling and keeping records[13].
Failure in collecting relevant facts	<ul style="list-style-type: none"> • Contractor failed to retrace valid records and data regarding to the delays[13]. • Contractor failed to provide factual and valid evidences of the delays.

2.3. Microsoft Project as project management tools

Microsoft Project is a powerful project management tools designed for project managers and construction professions to supervise and manage the project effectively. It allows users to integrate information of data such as work resources, workers tasks, and visualizing reports of the project, supervise the budget and cost, create linking tasks and allow the planning and scheduling of the project in a single platform.

As the information and technology fields become advance these days, implementation of software applications in construction industry aids the project management routines and increase the successful project implementation rate. Meanwhile, software application such as Microsoft Project also reduce the time consumed to manage the project and the methods of managing the project are simplified into useful functions in the software[3].

Figure 2 shows the flow on how Microsoft Project act as a management tool which at the same time associates in assessing the EOT.

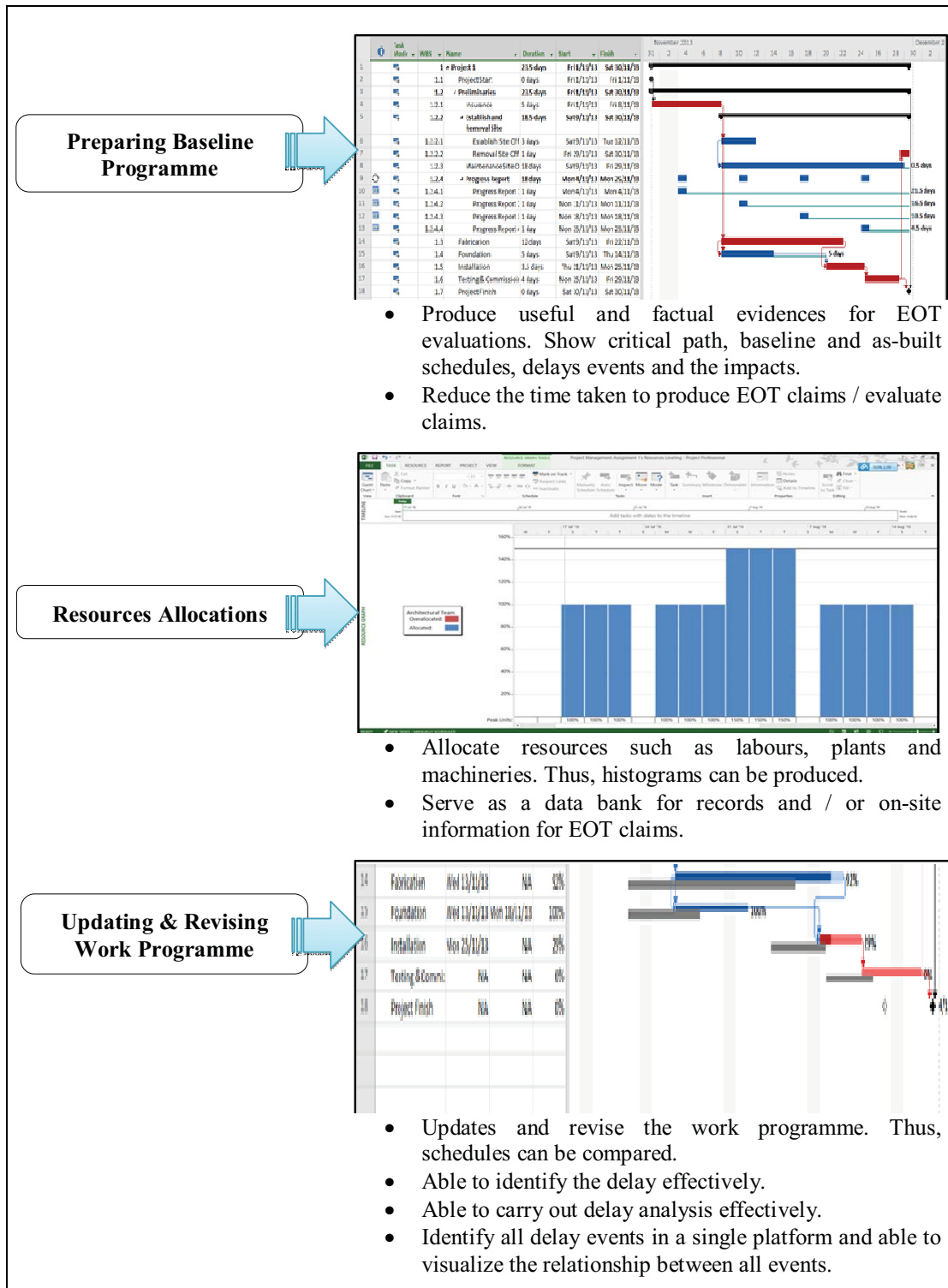


Figure 2. Microsoft Project as management tool in associating assessment of EOT.

3. Research methodology

This research applied both quantitative methods. The quantitative methods was used in order to determine the problems of the EOT in the current industry and the effectiveness of Microsoft Project in claiming and assessing EOT in forms of questionnaires. The respondents were architects and quantity surveyors in Kuala Lumpur Area.

The survey method was adopted and questionnaires were distributed to architect consultant firms and quantity surveyor consultant firms. The perspective of both sides were required to measure the effectiveness of Microsoft Project throughout the application process of EOT. On the other hand, the opinions of QS were also taken into accountability because QS also involve in the EOT associated tasks.

The questions in the questionnaire were designed in a multiple choices format. The multiple choices questions with Five-Points Likert Scale (1= highly not effective, 2= less effective, 3= moderate, 4= slightly effective and 5= highly effective) and dichotomous questions (Yes or No) was applied. Open-ended questions enabled a better explanation and relevant information regarding this research.

The respondents are made up of 100 respondents which consisted of fifty (50) numbers of architects and fifty (50) numbers of QS. Lists of architects and QS firms will be selected by "Simple and Random" method from Malaysian Institute of Architects (PAM) and Board of Quantity Surveyors Malaysia (BQSM).

4. Result and discussion

The absence of clear guideline on the procedures of claiming and assessing EOT is the major challenges faced by the consultants, especially the architect as the client's representative for a construction project. It is associated with the failure of contractors in retracing valid record and providing factual and valid evidence of the delays.

Inexistence of agreed basis of EOT claiming and assessing procedures between contractors and architect / contract administrators has been considered as the minor challenge faced by the architect or other consultants in assessing the EOT claims.

Table 3. EOT Associated Problems and Challenges.

	Problems and Challenges	RII Values	Ranks
Flaws in PAM2006 standard form of contract	• Absence clear guideline regarding to the procedures of claiming / assessing EOT application in standard form of contract.	0.674	1
	• Inexistence of agreed basis of EOT claiming and assessing procedures between contractors and Architect / contract administrators.	0.587	7
	• Improprate delay analysis method.	0.591	6
Poor EOT claims' submission	• Failure in delays identification.	0.600	5
Late EOT claims' submission	• Late submission of claims by contractors.	0.617	4
Failure in collecting relevant facts	• Contractors fail to retrace valid records and data regarding to the delays.	0.670	2
	• Contractors fail to provide factual and valid evidences of the delays.	0.665	3

Microsoft Project consists of numerous features that ease the management of the project. The respondents gave feedback that Microsoft Project is a tool that serves as a data bank for records and on-site information for EOT claim. Therefore, it is considered as an effective tool which may completely assist the assessment of EOT claim submitted by the contractors, while at the same time it has the ability to carry out the delay analysis effectively.

Table 4. Effectiveness of Microsoft Project as a tool in assessing EOT claim.

Effectiveness of Microsoft Project (Architects & QS)		RII Values	Ranks
Preparing Baseline Programme	• Produce useful and factual evidences for EOT evaluations. Show critical path, baseline and as-built schedules, delays events and the impacts.	0.639	4
	• Reduce the time taken to produce EOT claims / Evaluate Claims.	0.609	7
Resources Allocations	• Allocate resources such as labours, plants and machineries. Thus, histograms can be produced.	0.626	5
	• Serve as a data bank for records and / or on-site information for EOT claims.	0.691	1
Updating & Revising Work Programme	• Updates and revise the work programme. Thus, schedules can be compared.	0.665	3
	• Able to identify the delays effectively.	0.600	8
	• Able to carry out delay analysis effectively.	0.678	2
	• Identify all delay events in a single platform and able to visualize the relationship between all events.	0.622	6

It is agreeable by the architects/ contract administrator that Microsoft Project has the potential to be the reliable planning tool in assessing EOT. As it can be served as a data bank for records and / or on-site information for the EOT claims, it has the potential to solve the difficulties or challenges of contractors in retrace and provide the factual and valid record of the delays.

5. Conclusion

It is recommended that, the project managers and contract administrators should update and revise the schedule regularly as some of the respondents (mainly architects and QS consultants) had mentioned that most of the contractors do not update the schedules unless problems are encountered during the construction process. On the other side, courses and trainings related to Microsoft Project and other similar project management software should be given to the employees by companies and firms to enhance the knowledge and encourage the usage of such software. These trainings can also begin in university level whereby lectures regarding to these software applications are given to construction students and therefore the students will be acquired with such knowledge before actual employments.

Furthermore, the industry and professions should be open-minded to accept the implementation of project management software such as Microsoft Project and other software as well as these software applications will keep on upgrading and improving with more features and functions to ease the flow

of the projects in the future with lesser effort but greater efficiency and effectiveness. Last but not least, standard form of contracts such as PAM Contract 2006 do not provide sufficient information and instructions regarding to the EOT application and it is an undeniable fact and it is further proven in this study. Although enforcing the implementations of Microsoft Project and other similar software as mandatory in performing EOT tasks will be difficult, yet PAM should look into the problems of lacking clear guidance for preparing and evaluation EOT in the near future or upcoming edition of contract.

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