

CLAIM MANAGEMENT FRAMEWORK UNDER FIDIC 2017: CONTRACTOR CLAIM SUBMISSION

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Article History: Received on 07th January, Revised on 19th February, Published on 19th March 2019

Abstract

Purpose of the study: The objective of this research is to develop a framework for managing the claim document. The contractual and management issues will be considered in this framework to enhance the Claims Management System (CMS). The framework includes the mechanism of claim submission based on the clauses and procedures of Fédération Internationale Des Ingénieurs Conseils ([FIDIC, 2017](#)).

Methodology: Qualitative methodology has been selected for this paper as the topic requires a collection of sensitive information from an experienced professional. The proposed Claims Management (CM) framework is developed on the basis of a study conducted to rank the feature required for CMS. This study has been conducted among 43 experts in CM field working on contractor firm's category A. Then, the framework was verified by seven experts who participated in the first study.

Main Findings: Eleven features were required for CMS that can enhance contractor claim submission. These factors have different levels of importance. The top three factors are Tracking Claim Status (99.5%), Supporting all types of documents (96.3%), and having a Centralized Database (93.0%). Based on these features, the proposed framework was developed to improve contractor claim submission.

Applications of this study: Applying the proposed framework reduces human efforts in getting documents related to claims by its systematic recording, transparency, reminder feature, contractual guide, user friendliness, and other features of the system. Moreover, it provides the contractual support pursuant to [FIDIC 2017](#) clauses.

Novelty/Originality of this study: The framework will improve contractor claim submission and the contractor will be satisfied by claim resolution and engineer determination. Side by side, the framework will save about 50% of time consumed by the claims analysts that is usually spent in collecting, screening, and identifying information related to claim event in the project's documentation.

Keywords: Claim Management, Contractor, Construction, Document Control, Framework, [FIDIC 2017](#).

INTRODUCTION

Claims have been found to be the most cited facts in most of the construction projects ([Ho, 2016](#)). It becomes more common in the world and has a significant effect on the projects' cost and time ([Bakhary et al., 2018](#)). The claim preparation usually is not a straightforward task, as the claim submittal contains evidence, supported documents, and impacted programs to substantiate the claim. The red book [FIDIC 2017](#) release edition contains twenty-eight (28) sub-clauses defining the situation which can occur ([FIDIC, 2017](#)). These sub-clauses enable the contractor to submit the claim for the addition of time and/or cost ([Kycia, 2018](#)). Accordingly, claims shall be submitted within a certain time frame ([Ali, 2015](#)). In the absence of effective document control for claims, this task may be made much more difficult and takes too much time to prepare.

The claim analysts spend 70% to 80% of their professional time in searching project documentation ([Hammad, 2001](#)). This issue aggravates when project documentation is kept in an unstructured database. It becomes more significant if the preparation of the claim is carried out after the project completion date. On the other hand, unavailability of the key person in the project, especially the one who has the history of the claim by this time, may lead the contractor to miss the history of the claim event as it fades or becomes fuzzy. Accordingly, it will be so difficult for the new staff to fully understand what really happened during the project period ([Tan & Anumba, 2013](#)). Therefore, in the absence of a productive system for managing and controlling claims during the claims lifecycle, disputing parties may wind up at the losing end, challenging the claims by an opposing party who faces troubles to prove their rights ([Tan & Anumba, 2013](#)).

In order to solve the issue of omitting related documents in the preparation and submission of a claim, some researchers have adopted the strategy that it is essential for all project groups to be a part of the same document exchange

framework, and to enlist or register all their documents within a central database ([Hammad & Alkass, 2000](#)). CMS shall contain some requirements and features, which are essential for the program to facilitate. The concept implemented for the development of the framework is to create an overview of the history of a claim from its initiation to the claim finalization, which are claim notice and the particulars supported with a relevant contemporary substantiating document. In order to achieve this, the framework comprises an IT system called CMS to administer the workflow for claims and the claim's documentation. In addition, the following basis is required for the end user to facilitate the program in an easy way, which is not limited to friendly use, accessibility, consistency, security, and well-structured template for various kinds of claims ([Tan & Anumba, 2013](#)).

LITERATURE REVIEW

Claim Procedure under [FIDIC 2017](#)

There are processes and procedures followed by the contractor under [FIDIC 2017](#). These processes can be described as follows:

Notices of Claims

Notices of claims are the ones through which the contractor can estimate the time delay and cost by reporting the event to the engineer and the employer upon occurrence ([Ali, 2015](#)). Under Clause 20.2.1, the contractor is under an obligation to give a written notice, if any, to the engineer describing the event giving rise to the cost, loss, or delay if the claim is entitled, regardless of whether for cost and/or time, not later than 28 days after the contractor becomes aware, or should have become aware of the circumstances giving rise to the claim. This notice may present the initial estimates of the likely impact of time and costs. If the contractor does not come with this notification, then the contractor neither gets an extension of time nor the extra cost, and the employer is released from all liabilities regarding the claim. Exceptionally, in respect of Sub-Clause 4.12 'Unforeseeable Physical Conditions', notice has to be given as soon as practicable. The notice can be very brief giving only the essential facts of the event or circumstance, but should contain the correct contractual references. If the contractor fails to give a notice of claim within a period of 28 days, then the contractor shall not be entitled to any additional payment ([FIDIC, 2017](#)).

If the engineer receives the notice of claim from the contractor after 28 days and he considers that the contractor failed to submit the notice of claim, then the engineer shall reply to the contractor that the notice is not valid after receiving the notice within 14 days. Otherwise, the contractor's notice of claim will be considered as a valid notice ([FIDIC, 2017](#)).

Fully Detailed Claim

The contractor shall submit a fully detailed claim within 84 days, starting from the date of event occurrence or contractor becoming aware or should be aware, pursuant to sub-clause 20.2.4. A full detailed claim contains the detailed description of the event, statement of contractual and/or other legal bases of the claim, all supporting documents and contemporary documents, and full supporting detailed report of the claim showing event cause and effect, and impacted program ([FIDIC, 2017](#)).

There are a variety of approaches to prepare a detailed claim. No format will be the best in each case. However, the described format can be considered as the one most utilized format. It is designed to introduce the claim event in a way similar to how it would be shown in court and a chance is given to several people to work together and save time. The fully detailed claim shall be presented in a logical method using the "Top-Down" approach (Contract to Impact) as per the following points ([FIDIC, 2017](#)):

Contract Particulars

The following items to be present as a detail of contract particular, such as project title, project description, project stakeholders, type of contract, contract dates, contract values, etc.

Claim Events Chronology

When a claim is submitted, a history of the event shall be submitted along with a general proof of entitlement and how the contractor suffered from the event, which was out of the contractor's control ([Shadid, 2015](#)).

Causes and Effects

The contractor has to establish a strong link between the causes of his claim event and their impacts and effects of damages suffered from the other party's actions. The contractor needs to recognize these causes carefully showing the

contractual bases for the claim based on related FIDIC clauses and providing all related contemporary documents to substantiate the claim in the right way. If these causes are not evoked by the contractor, then they do not fall under the contractor's liability (Ali, 2015). The outcome of the contractor claims will be the new project completion date, assuming that the contractor can prove his entitlements to additional time and/or cost (Hwang & Low, 2012).

Claims Management System

One of the most important deliverables of the system envisaged are the features that allow the useful knowledge about claims generated to be captured for reuse in existing or future projects. Leveraging knowledge through IT alone is often hard to achieve as there are human, cultural, and organizational issues, such as reluctance to share knowledge, which is not readily resolved by IT. Conversely, a purely non-IT approach is not going to benefit from the faster, cheaper, and broader source of data and means of communication to enable people to share knowledge offered by IT (Tan et al., 2011). Hence, many people have advocated for a more balanced approach, which comprises a combination of IT system and non-IT knowledge management technique to tap from the best of both worlds.

The concept adopted for the development of the system is to create an "as complete as possible" history of a claim from its initiation to the settlement, which is supplemented by the relevant substantiating document from the parties involved and accompanied by a post-mortem review of the outcome. In order to achieve this, the framework comprises an IT system called Claims Transaction System to administer the workflow for claims and the claims documentation, and also a post mortem (a non-IT knowledge management technique) to capture the knowledge generated from the claim. The details of the components are described in the subsequent sections.

Claims Management System Features

CMS shall contain some features, which are essential for the program to facilitate. The concept adopted for the development of the system is to create an overview of the history of a claim from its initiation to the claim finalization, which are claim notice and particulars supported with a relevant contemporary substantiating document. In order to achieve this and to administer the workflow for claims and the claim's documentation, the framework comprises an IT system called CMS. In addition, the following basis is required for the end users to facilitate the program in an easy way, which is not limited to friendly use, accessibility, consistency, security, and well-designed forms for different types of claims (Tan & Anumba, 2013). These claims are basic since the program is to be made accessible through the Web as an administrative process.

METHODOLOGY

A qualitative study was conducted in the UAE among 43 experts in construction claim field working in the contractor firm's A category. Semi-structured interviews were designed in the instrument for the quantitative survey of this study. Respondents were asked to rate the CMS features and requirements on a 5-point Likert scale (1 for "not important" and 5 for "very important") regarding the importance of CMS to enhance the contractor claim submission.

Table 1: Relative importance of CMS features

CMS Feature	Freq. Index	Rank	CMS Feature	Freq. Index	Rank
Tracking Claim Status	99.5%	1	Combining a number of claims into one	34.4%	11
Raising Reminder	83.7%	6	Customization based on company profile	58.6%	10
Centralized Database	93.0%	3	Friendly Use	88.8%	5
Online Claims Transmittal	63.7%	8	Supporting all types of document	96.3%	2
Provide templates for letters and reports	64.7%	7	No software needs to be installed	60.9%	9
Categorize Claim Documentation	89.8%	4			
Test Statistics:					
Kendall's W=0.692					
χ^2 Sample =248.689; with df =18; χ^2 critical ($\alpha=0.001$)=29.239					

The results, shown in Table 1, indicate that there was a strong agreement between the respondents in their rankings (W=0.69) and this was statistically significant at 95% confidence level. It demonstrates that the "Tracking Claim Status" ranked first followed by "Supporting all types of documents" and "Centralized Database", while "Combining a Number of Claims into One" comes at the lowest impact followed by "Customization based on company profile" and "No software needs to be installed".

Strategy of the Claim Management Framework

In order to develop a claim submission framework, two steps have to be followed. The first step is to classify input data and then reorganize it in order to enhance claim submission. Here, we assume that the required document and analysis are already in hand. The strategy of how to reorganize the claim submission is the concern discussed here. Input data can be classified into three main categories, as shown in Figure 1.

- Data related to the project: which is called contract particulars
- Data related to the anticipated claim event: which contains event overview, event chronology, cause and effect, analysis of time and cost impact.
- Data related to contract: Which contains [FIDIC 2017](#) clauses that are related to contractor claim in addition to contract specifications and conditions.

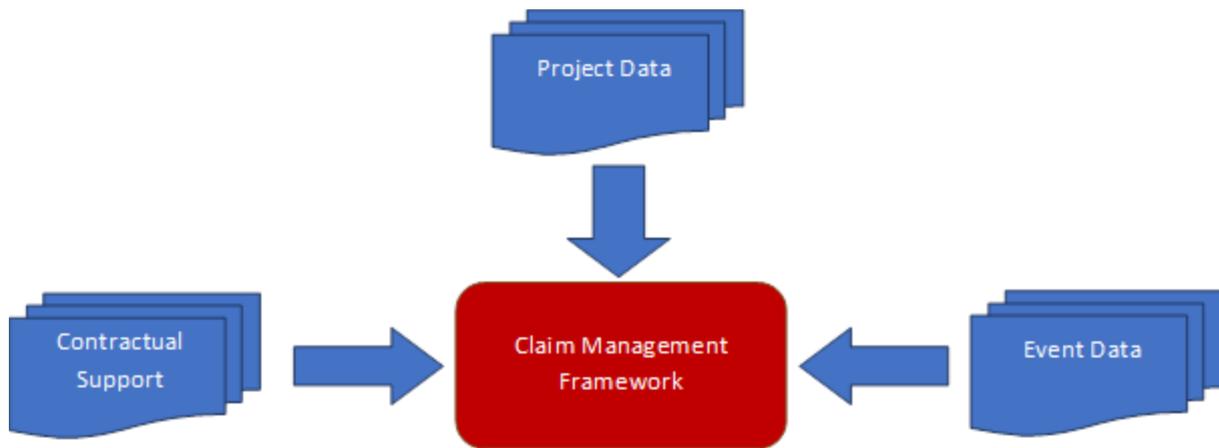


Figure 1. Classification of claim management framework input data

Project Data

Claim submission shall contain some basic information about the project. This information is called as contract particulars, which can be divided into six main parts as presented in Figure 2.

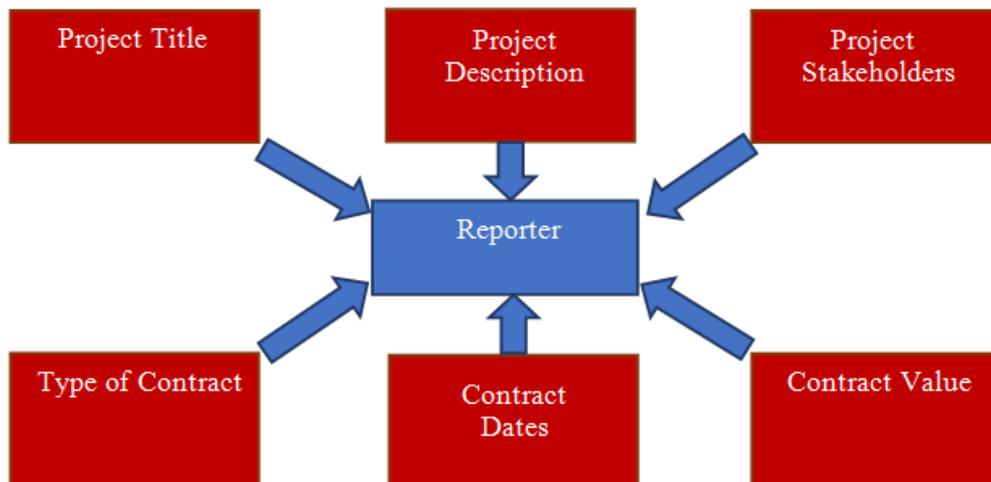


Figure 2. Project Database

Project Title

In this, part project name and contract number shall be presented as mentioned in the signed contract or agreement. This part will be introduced in the narrative text.

Project Description

Brief introduction about project location and components, such as the number of building, number of floors, main items quantity, etc. This part will be presented in the narrative text.

Project Stakeholders

The parties related to the project and claim in addition to basic related data like location, state, PO box, etc., shall be introduced, such as Employer, Engineer, Designer, Contractor, Sub-contractor, etc. This part shall be introduced as the text.

Type of contract

In this part, one of the two types of contracts, namely, lump sum contract or cost-plus contract, are chosen.

Contract Dates

The contract dates are introduced in the dates form. This will be for the following dates: project commencement date, project completion date, revised completion date, and contractual completion milestone date.

Contract Values

This part shows the original contract value and the revised one on the basis of approved variation order/s. The value will be formalized in figure data.

Event Data

Due to the numerous natures of claim document production work during the construction project life cycle, the process of the proposed framework is divided into two steps.

The first step is supported by the proposed framework mapping the required claim event data. The primary step of the framework attempts to simulate the workflow of the standard claim event document management process, especially including the classification of claim document and filing them in line with individual claim event, respectively. The concept of this step is shown in Figure 3.

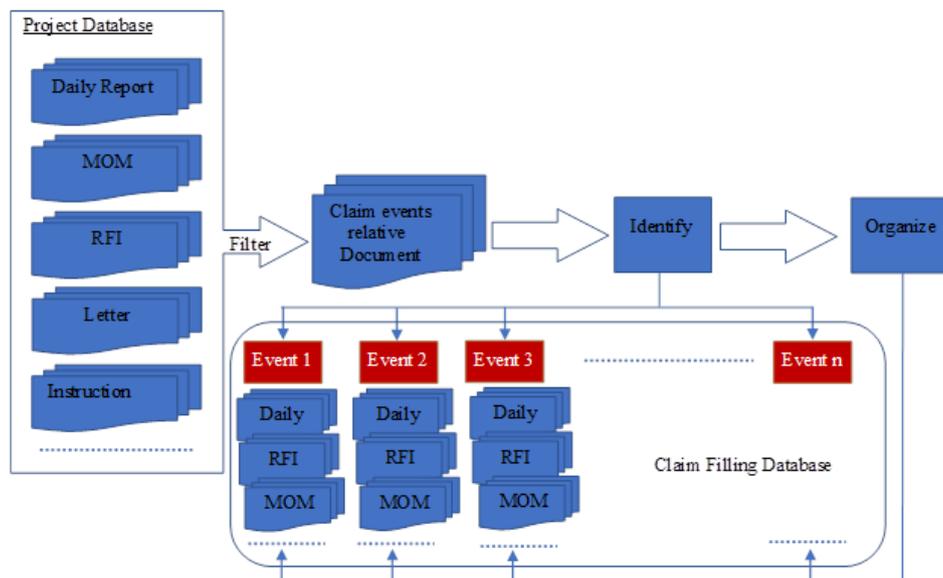


Figure 3. Concept of the Claim Document Identifying and Filing Framework

This step of the framework begins with the commencement date of a project to its completion date. It covers the duration in which the claim probability appears. The incoming and outgoing document for the project is filtered, which is considered as a smart agent in the framework, the document is then segregated into two categories - claim irrelevant files which will be eliminated and claim relevant files which will be reserved - in the framework. After that, the relevant files will be forward to “identify” and to analyze the claim relevant document into two categories. The first category shall contain the document that might be experiencing an anticipated claim event, whereas the second category contains the documents that are present as a part of the claim event history of an existing claim event. Next, the “organizer” can make the matching filing work for each category in a certain database: a new claim event will be generated depending on the first-category document and the document will be kept as the first record of that newly generated event, while the files belong to the second category will be placed under the existing event to which the document is related. With this daily-based workflow, the claim record-keeping work will be automatically updated while the project is developing.

The second step of the framework should be adopted when the claim event is going to end and meanwhile, all claim event history is basically finalized. The framework’s mechanism of this step can be shown in Figure 4.

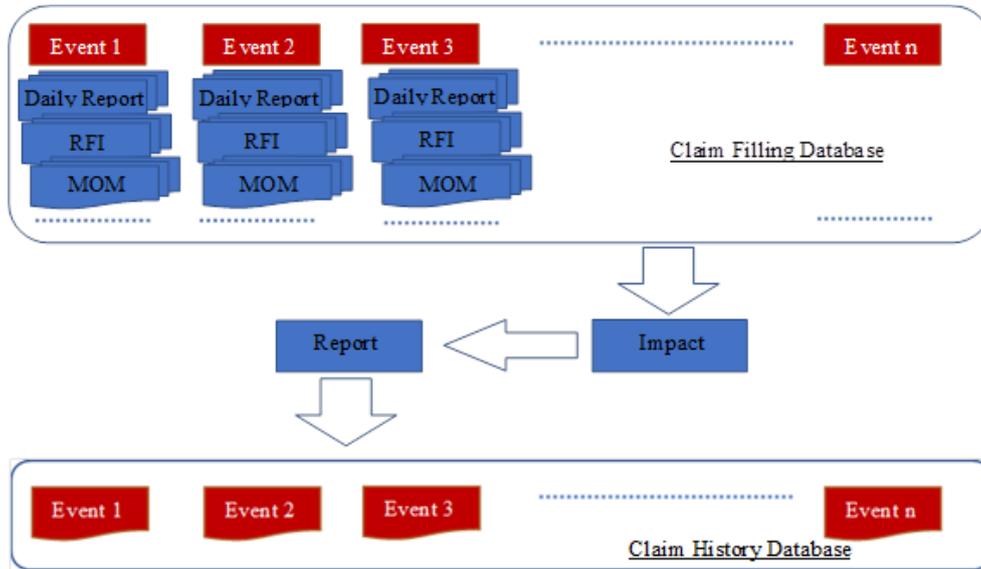


Figure 4. Framework of claim events history database generation

In this step, in the claim document database, all of the claim relevant documents have been organized by the claim events. To each one of those events, the “impact” does the evaluation of the cost and/or time impact claimed for showing the case and effect study in addition to mitigation action done by the contractor to reduce the event impact. The impact part cannot be done without professional or expert QS and the planner has to be manually fed to the system. Later, the “report” will generate the event chronology along with all supporting documents. Finally, the history for each of the claim events is finished and the claim history is ready to be submitted to the engineer for review and determination.

Contractual Support

In this section, 28 related [FIDIC 2017](#) clauses to the contractor’s claim are introduced and listed to the framework. The contractor ticks the clauses related to his event and supports his claim. Later, the “report” engine shall report the clause number and name with its description.

The “impact” engine notifies the contractor team about the contractor’s right to claim as per [FIDIC 2017](#) whatever time, cost and/or profit on the basis of selected clauses. The “reporter” process will not be completed unless the contractor calculates the impact of the claim event. Figure 5 presents the [FIDIC 2017](#) clauses that are related to the contractor claim and the processes related to contractual support.

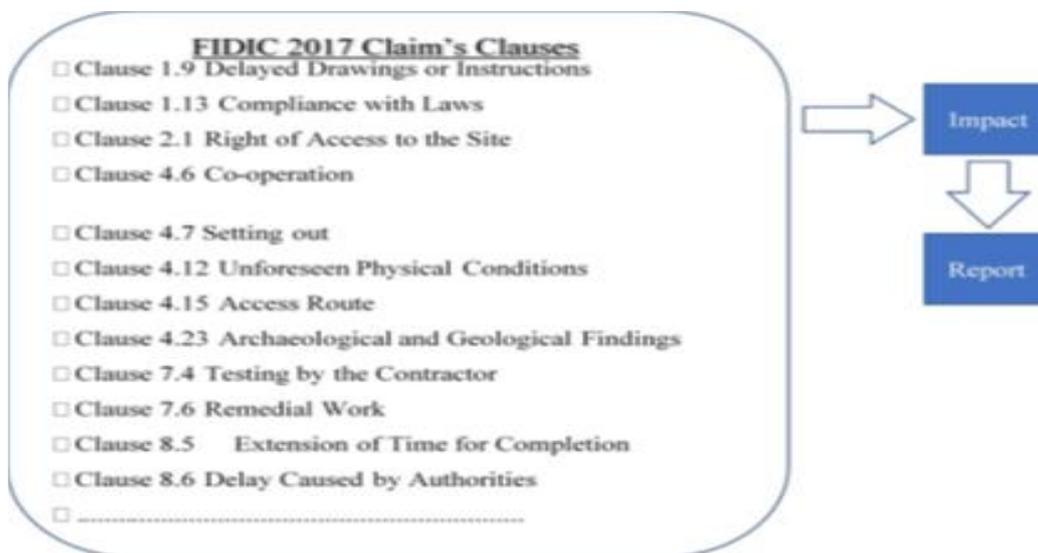


Figure 5. Contractual support process

Smart Engines

Eight types of smart engines have been introduced in this framework. The mechanism of each engine can be described as follows:

Notification Engine

Notification engine will notify the contractor team during the first 28 days from the event occurrence date or the time that the contractor is aware of the circumstances giving rise to the claim to give a written notice of the claim percent as per sub-clause 20.2.1 to the engineer. This notice shall describe the event and shall present the initial estimates of the likely impact of time and costs.

After the contractor gives a written notice of claim to the engineer, the contractor submits a fully detailed claim during the period of 84 days starting from the event date or the contractor becoming aware or should be aware inline to sub-clause 20.2.4. A full detailed claim shall be generated by the “report” engine.

Filter Engine

Filter Engine is the most important engine in this framework. The philosophy of this engine is to filter the project document to the document relevant to claim event and exclude the document irrelevant to claim event.

Identify Engine

Identify Engine is responsible for categorizing document relative to the claim event as two categories on the basis of claim status. The first category is for anticipated claim event may be acquired, so that the contractor can build his claim and the second category is for the existing claim event, so that the contractor can develop a history of the currently running event. This engine identifies the document not only by its name or subject, but also by its contents.

Organize Engine

Organize engine is responsible to organize and file contemporary document on the basis of a type of document, such as letters, daily report, weekly report, monthly report, engineers’ instruction, shop drawing submittal, etc., and store it in the claim file database. Once a new claim’s event is generated, the related document is placed in the claim file database under the new claim event. The first type of document is reserved until the claim event becomes existent. Once the claim event becomes existent, the first type of document will be stored along with the second type of document on the document file database under the newly created event.

Impact Engine

Impact engine collects the impact calculation whatever time or cost. Professional planner and QS shall determine the actual impact of claim event upon the project progress and shall assess the longest or critical path of the project.

Report Engine

The report engine is responsible for generating a fully detailed claim report. The detailed claim report is organized and generated, as shown in Figure 6.

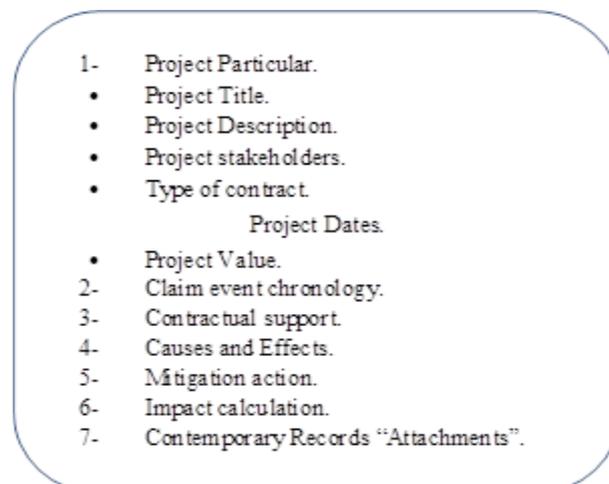


Figure 6. Detailed Claim report structure

Administration Engine

Administration engine is responsible to give privilege for the user to add new records, view present document, edit present document, delete present document, and approve the change. Users with system administrative privilege can customize the system to reflect the organizational hierarchy of the contractor organization chart in addition to engineer preventative. For example, engineer preventative can review the final report only. Additionally, the project manager is the one who can approve the change however it can be, add a new document, delete, or edit an existing document.

Security Engine

Security engine is responsible for the authentication access of the users. Authentication is any process by which the system verifies that someone is the one who claims to be. This usually involves a username and a password. Furthermore, it is important to ensure that claim data and document is not disclosed to any unauthorized parties.

DISCUSSION / ANALYSIS

In order to validate the proposed framework, seven experts participated in an interview survey. All seven experts are actively involved in claim management, specializing in claim preparation and submission, and possess relevant qualifications. The average number of years of the seven experts' experience in the construction industry was 19 years.

The experts were requested among a structured, semi-closed questionnaire to evaluate the framework. Furthermore, providing tick-box responses, some of the experts furnished their personal observations concerning the framework. Most of the received answers were largely positive. A brief of the responses can be summarized as follows:

As seen in Table 2, a majority of the experts agreed that the framework presents an essential issue in the claim management area. Regarding the capability in performing the intended function accurately (Table 3), the results confirmed that the framework is capable. This suggests that experts concern the framework as a beneficial tool for claim management

Table 2: Respondent's answer to question no. 1

Q1: Is the framework address an important problem in the field of claim management?			
Exp1: Yes, quite important	Exp2: Yes, quite important	Exp3: Yes, quite important	Exp4: Yes, but not important
Exp5: Yes, quite important	Exp6: Yes, quite important	Exp7: Yes, quite important	

Table 3: Respondent's answer to question no. 2

Q2: Is the framework can track claim status?			
Exp1: Yes, highly can track	Exp2: Yes, can track	Exp3: Yes, can track	Exp4: May be can track
Exp5: Yes, highly can track	Exp6: Yes, can track	Exp7: Yes, highly capable	

Most experts expected that the framework is required for a minimum level of recourse to be implemented (Table 4). One expert commented that its operation will not expend much effort and time and subsequently, its advantage will overshadow the expenses. All experts felt that the framework covers all claim process, from the start (or likely start) of the claim event till claim submission (Table 5). One expert commented that it covered a completed part of claim preparation and submission in a straightforward and consistent way, which he though would be easy to apply in practice.

Table 4: Respondent's answer to question no. 3

Q3: Is the framework need to resource to be applied?			
Exp1: Yes, but it will not be too costly to operate.	Exp2: Yes, but it will not be too costly to operate.	Exp3: No need for additional resource.	Exp4: Benefits of using it justifies any resource requirements.
Exp5: minimum resource is required.	Exp6: No need for additional resource.	Exp7: No need for additional resource.	

Table 5: Respondent's answer to question no. 4

Q4: Is the framework covering the claim management process?			
Exp1: Yes, it is	Exp2: Yes, it is	Exp3: Yes, it is	Exp4: Yes, it is
Exp5: Yes, it is	Exp6: Yes, it is	Exp7: Yes, it is	

According to Table 6, Table 7, and Table 8 **Error! Reference source not found.**, most of the experts agreed that the framework provides contractual support for the claim. While one expert stated that it is not enough and we have to refer to contract specification also. All experts had a different opinion about the time that can be saved in digging in the

project document by using the framework. It was between 40% and 70% and on an average, it can be said that about 53% of the analyst time can be saved. Finally, all experts agreed that the framework enhances contractor claim submission.

Table 6: Respondent's answer to question no. 5

Q5: Do you think that the framework will provide the contractual support for the claim?			
Exp1: Yes, it is	Exp2: Yes, but not enough	Exp3: Yes, it is	Exp4: Yes, it is
Exp5: Yes, it is	Exp6: Yes, it is	Exp7: Yes, it is	

Table 7: Respondent's answer to question no. 6

Q6: How much do you think that framework will save claims analyst's time digging in the documentation in percentage wise?			
Exp 1: 40%	Exp 2: 70%	Exp 3: 50%	Exp 4: 40%
Exp 5: 60%	Exp 6: 50%	Exp 7: 60%	

Table 8: Respondent's answer to question no. 7

Q7: Do you think that the framework will enhance contractor claim submission?			
Exp1: Yes, it is	Exp2: Yes, it is	Exp3: Yes, it is	Exp4: Yes, it is
Exp5: Yes, it is	Exp6: Yes, it is	Exp7: Yes, it is	

CONCLUSION

This paper presents the proposed framework and demonstrates its concept, methodology, and mechanism. The validation of the proposed framework is introduced by the interview survey of seven experts. By and large, the views of experts were in favor of the framework recommending that the framework would be viewed as an important tool for claim management. This represents a positive contribution to the body of knowledge and practice of claim preparation and submission within contractor organizations, as it will save more than 50% of analysts' time and will combine between the contractual and document control support.

LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

The proposed CMS framework still has some limitations. It examines only contractor construction companies in the United Arab Emirates without considering the views of engineers and owners. Moreover, the methodology should be more diverse and in-depth, which was difficult as the information required was very sensitive and confidential.

Therefore, more investigations for the usage and implementation of the framework are subsequently needed. The following points have to be considered for further research and investigation:

- This study was restricted to the claims introduced by contractors and do not withstand the clients and subcontractors, who are also included in such claims, thereby needing more investigation in this particular area.
- CMS framework can be improved and introduced to real life by developing IT software built on the concept of this framework.
- Contractor's entitlements are calculated manually. Therefore, more investigation for this particular area is required to develop, mechanize, and calculate it automatically by linking it with other software that calculate the contractor's entitlements.

ACKNOWLEDGEMENT

The authors express their gratitude towards the participants of the present study, who helped, supported, and shared information towards attaining the study objectives

REFERENCES

- Ali, A. M. E. F. (2015). A study on Causes and Management of Claims in the Sudanese Construction Industry, M.Sc. Thesis, Construction Management, Sudan University of Science and Technology, Sudan.
- Bakhary, N. A., Adnan, H. and Ibrahim, A. (2018). 'Construction claim problems in Malaysia: from the contractor's perspective', in MATEC Web of Conferences 192, 02004, pp. 4–7.
- FIDIC (2017) Conditions of Contract for Construction. 2nd edition. FIDIC.



- Hammad, M. M. (2001). CPDICENTER: Web-Based Virtual Construction Project Document Information Center in Support of Claims Preparation. Ph.D. Thesis, Faculty of Engineering and Computer Science, Concordia University, Montreal, Quebec, Canada.
- Hammad, M. M., and Alkass, S. T. (2000). "A Web-Based Construction Project Document Information Center in Support of Claims Preparation." Proc., Eighth International Conference on Computing in Civil and Building Engineering, ASCE, 279, 110.
- Ho, S. P., Asce, A. M., Liu, L. Y. and Asce, M. (2016). 'Analytical Model for Analyzing Construction Claims and Opportunistic Bidding Analytical Model for Analyzing Construction Claims and Opportunistic Bidding', 9364(February 2004). doi: 10.1061/(ASCE)0733-9364(2004)130
- Hwang, B. G. and Low, L. K. (2012) 'Construction project change management in Singapore: Status, importance and impact', International Journal of Project Management. Elsevier Ltd. APM and IPMA, 30(7), pp. 817–826.
- Kycia, K. (2018) The new FIDIC conditions of contract (2017) from the polish perspective. Dla Piper
- Shadid, M. S. R. (2015) Construction Claims Management in United Arab Emirates Construction Industry. M.Sc. Thesis, Faculty of Engineering, Eastern Mediterranean University, Gazimagusa, North Cyprus.
- Tan, H. C., Anumba, C. and Yap, E. H. (2011) 'The Development of a Web-based Construction Claims Management System: End Users' Requirements', in 2011 International Conference on Construction and Real Estate Management, At Guangzhou, China, Volume: 1.
- Tan, H. chen and Anumba, C. J. (2013). 'Web-Based Construction Claims Management System: Operation of the Prototype', 30th CIB W78 International Conference. Beijing, China, pp. 594–604.