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Paper Research



Development of an Analytical Software for Communication management in Project Management Offices

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Abstract

This study deals with the problem of communication management system in Project Management Office (PMO) in Iraqi construction sectors. The main objective of this study was to estimate and develop the Communication Management System (CMS). Methodology: Visual basic language has been used to build analytical software which is (Communication Management Software). This software displays the overall information in every single project management office followed by the evaluation of the actuality of communication methods with two arithmetic equations so that estimate the effectiveness and barriers of Communication Management System. Statistical Package for the Social Sciences, SPSS vr.23.0 was used for Data analysis and determining the equations to calculate the efficiency and barriers of PMO; Developed Computer Software: Based on the data analysis results, it will provide computer software to calculate the efficiency and barriers of PMO and validation and verification of computer software followed by the discussion of the results. CMS was weighed depending on a questionnaire of ten project management engineers in Iraqi construction zones. Results showed that 100% stated to the simple usage of the software, and 75% of the research sample proven that the software discussed three matters which are cost, time, and performance. The result expressed that the half of the studied sample proved the CMS accuracy to valuation certainty of CMS. The 55% of the resulting sample expressed is very good software for both increasing the performance in the middle of the members of the Project Management Office. Evaluation of the proposed software indicated that it is effective in communication management in Project Management Office (PMO).

Keywords: *Analytical Software, Barriers, Communication, Efficiency, PMO, Project Management.*

1. Introduction

Advantages of project management are well documented; however, projects failure rates still remain high. One necessary candidate for improving the construction projects is that the Project Management Office (PMO). (Alaa et al, 2016)

The successful companies must deliver projects on time and within budget; as well as meet specifications while managing project risks. For years, Construction companies struggled to achieve these objectives, that challenge has led many to turn to project management offices (PMOs) as a way to boost construction of project efficiency. It can be noticed that many of the construction projects in Iraq have failed in achieving all or some of these objectives because of the lack in planning and project management. (Alaa, 2016). For years, Construction companies strived to deliver projects on time and within budget. But with today's emphasis on getting more for the construction companies has to rein in construction projects more closely than ever. PMOs can help project managers by providing the structure needed to the both standardize project management practices and facilitate construction project portfolio management, as well as determine methodologies for repeatable processes. (Alaa, 2016). Establishing a PMO contributes to increasing the effectiveness of project management by enabling the collection of knowledge from previous projects, both successful and unsuccessful, and learning from mistakes or justification for use of successful methods. It also enables a broad level of support, not only for projects, also for different levels of management. A study of best practice in project management in large functional organizations has strengthened the idea that there is a need to establish, exist and use PMOs. (Milin, Radaković 2012).

The need for the PMO is related to the growing number and complexity of projects throughout the business world which led to a certain form of centralization. However, the reality of PMOs is highly divergent. Nearly 75 unique functions have been identified (Aubry et al., 2007).

Studies have indicated that the primary reason for establishing a PMO is to achieve more successful project implementation and to have more predictable and usable tools, technique and process. This fact is mentioned by Dai and well, where they emphasized that the establishment of a PMO can encourage consistency and cultivate PM professionalism (Dai and William, 2004.) Establishing PMO is one approach toward improving overall project management effectiveness that leads to successful project outcomes. Communication is the center of society because it aids in producing mutual meanings and the organization of culture (Onyegiri, 2011). Various companies have been started to treat novel communication technologies for making a new paradigm product of workplace communication. There are entirely misunderstand by most of the administrators to identify the significance that could be realized from exposed and obvious communication processes. This level can ensure that ideas and goals are shared among people of different professional and cultural origins. Employee output and structural performance can be undesirably affected by the

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absence of advancement of perfect communication (Oppong and Birikorang, 2014).

Communication Management System shows a significant role in Project Management Offices (PMO) and the effort of PMO. There are many barriers in the communication area which are technical and financial obstacles and the obstacles which correlated to the efficiency of the communication management system.

Many ideas have been conducted by researchers and engineers in the Iraqi construction sectors. The problem of research recognized which are high cost, delay in time and poor performance because of usage of old-style means of communication, as well as its influence on the competence of PMO. Consequently, this study is achievement significance over the growth of the CMS, and enhancement of PMO.

In this study, a Communication Management Software (CMS) is built to evaluate and improve the CMS in PMO over the following steps:

Detect and recognize the main facts of PMO via judgment PMO name, establishment year, the property, member's knowledge about the administrative board and office manager.

Recognize the ways and procedures of the communications which are utilized at the PMO.

Assess the CMS effectiveness at the PMO.

Estimate the influence of CMS hurdle in PMO

CMS Valuation in the PMO.

Development of the tracked CMS at PMO.

Achieving and proving the precision of the proposed Software.

To achieve the objective of this study, the following approach was implemented:

1. Literature Survey: It is conducted to have an overall review of the topic of communication management. Literature review involves references, dissertations, journal papers, textbooks and Internet publications relating to the subject of research especially related to communication management.
2. Data collection: The Researcher has collected data and information from previous research titled "Statistical Evaluation for Communication Management in Iraqi Consultant Bureaus" in the year 2016 by Al-Zwainy et al, (2016).
3. Deriving Equations: Data analysis proceeded by using the statistical software SPSS vr.23.0, for determining the equations to calculate the efficiency and barriers of PMO.
4. Developed Computer Software: Based on the data analyses' results, it will provide computer software to calculate the efficiency and barriers of PMO and validations as well as verification of computer software to ultimately discuss the results.
5. Conclusions, recommendations and future research

With significance reason of communication in the management of projects and the tremendous development of communication technology and the emergence of various means of communication that play a role in the improvement of communications at companies and projects of construction and. So that, many studies have been directed to statement this turn:

Al-Saffar (2014) targets to advance in information and communications technology (ICT) to expand the act of data and correspondence administration from construction jobs. A technological system was presented by the study to address various issues, defy and inadequacy. The Questionnaire used in the study that contains the questions of (close-ended) and (open-ended). The results have been conducted that this proposal could improve the performance of the present case of project management.

Rimmington (2015) goals to demonstrate the impact of ICT on the social environment of the construction project sides and the outcome of the projects. Furthermore, a literature review has been undertaken to improve the theoretic part of the ICTs role in the construction project group. This review deals with several cases that subsequently tested at the site over observation and two validation assessment conversations. This study approves the existence of tension and conflicts in the interfaces of social and electronic statement in the environment studied.

Yitmen (2015) examine in his study around the influence of intercultural correspondence on stakeholder management process (SMP) in worldwide development ventures from the viewpoint of Turkish stakeholders. However, the survey was based on Turkish stakeholders such as consultancy, insurance brokers, contractors and financial consultants. In this study, we have distributed 205 questionnaire forms and the answer rates 68.78%. The research proposes the structural equation modeling (SEM) to accomplish the relative among earlier criteria of communication and action of stockholders.

Al-Zwainy et al (2016 a) targeted to evaluating the truth of the CMS in the Iraqi consulting offices. Furthermore, collecting data through interviews and questionnaires and followed by examination questionnaire using SPSS software. The outcome of this study involved the section discovered a shortage of information concerning the effectiveness of the communication system in the office of a consultant. As a final point, four sections contain the communication obstacles and individuals in to procedural communication obstacles, economic communication obstacles and communication obstacles consultant bureaus. The outcomes of this study model approved the actuality of communication management obstacles.

Alaa at el (2016) assessed the role of the Project Management Office in manage the engineering construction projects from the point of view sample of project managers and others who works in this field and that through the use of documented scientific studies in addition to personal interviews, the questionnaire and analysis of the results of them that have been prepared and distributed to this sample.

2. Materials and Methods

The main objective of this computer software was to provide a communication management in PMO; this may be justified according to the following points;

1) The importance of such software is due to its high accuracy in comparison to other communication management methods since the recent error that has occurred by the use of such software is negligible.
2) The lack of effective documentation software in Republic of Iraq which can be used to recover the typical communication of PMO; is using them to manage the communication.
3) There is no similar software currently in use by PMO, contract companies, or any other organization related to construction sectors in Iraq. All these authorities and organizations have agreed on the importance of the software as indicated by the questionnaire and personal interviews.

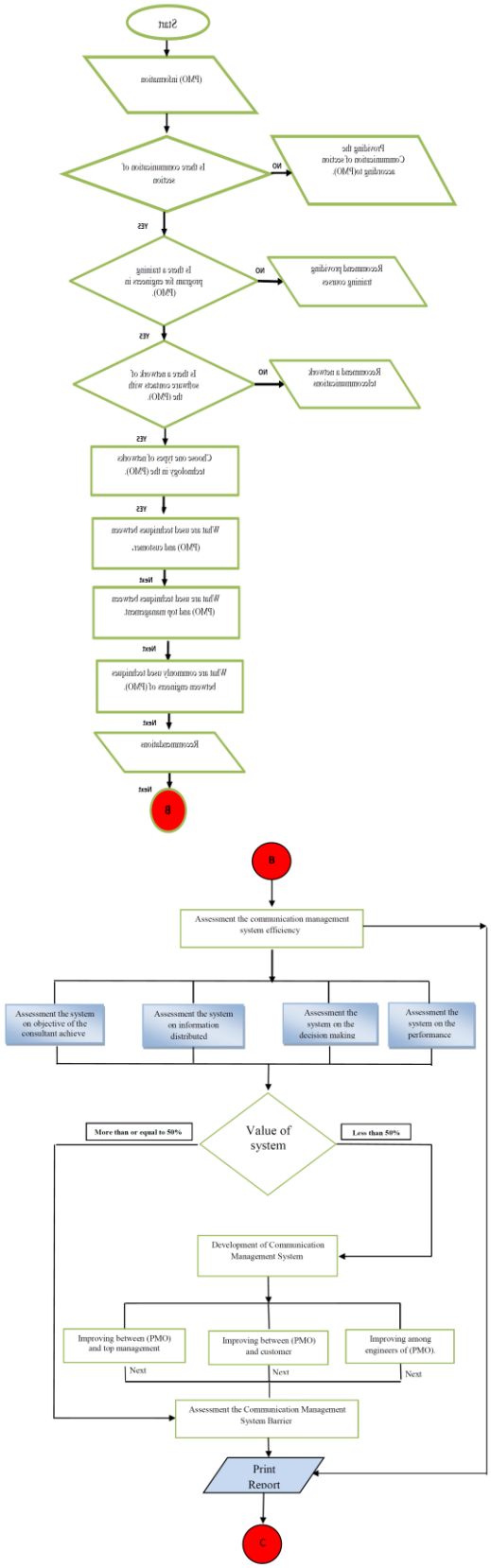
Main Components of Communications Management software consists of input, processing and output:

1) **Input:** This involves the PMO name, establishment year, manager and owner of PMO.
2) **Processing:** This involves the assessments of the Communications Management in PMO based on implementation, make a decision, improve information as well as the goals that PMO has attained. Furthermore, this processing involves the evaluation of the Communications Management systems.
3) **Output:** Determining the equations to calculate the efficiency and barriers of PMO.

In parametric of communication management system, it is permanently not easy to determine which parameters will be measured and how to assess their relevance to the system. The reason is that there is a weakness in information at the early level of PMO life cycle at what parametric estimate is at which the parametric estimating is commonly performed. Thus, it is recommended to find key parameters that give relevant information and measure the level of importance and uncertainty for each parameter. Such uncertainty can be explained by conducting an allergic analysis or brainstorm approach. In this study, it can be used to determine the weights of the communication management system for the qualification and barriers of PMO respectively. The equa-

tion of efficiency and barriers for communication management in PMO during results of the field survey is derived by the researcher, as illustrated below:

Once the optimum weights of equations were selected, other parameters have been integrated to develop comprehensive computer software for evaluation of communication management system in PMO as shown in Figure (1). The computer software consists of:



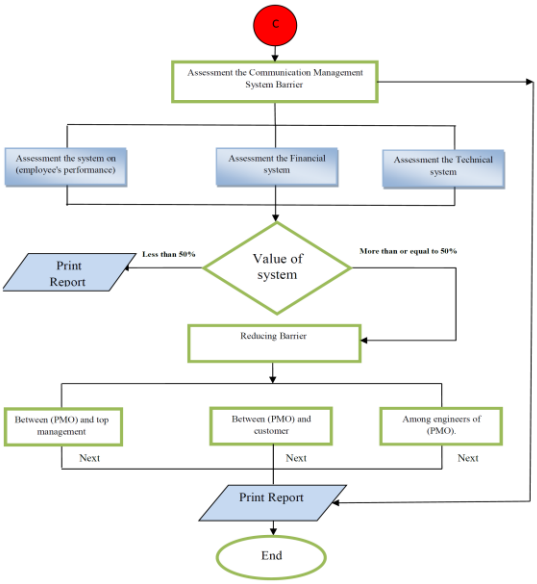


Fig.1: Flowchart of Computer Software

The specialists have programming information by Visual Fundamental dialect utilizing Visual Studio2016 framework in evaluation and advancement of CMS in PMO, to help the representatives in those PMO keeping in mind the end goal to accomplish better execution and to encourage the basic leadership process and give data in less time and cost. Specialists evaluated the running strides of correspondences administration programming utilizing the Visual Studio 2016.

How well the correspondence administration programming (CMS) in Iraqi PMO must be discovered to achieve the objective of this investigation? This is to assess and enhance the CMS in the PMO. The specialists composed an assessment survey shape, the assessment poll frames were dispersed among fifteen (15) engineers who worked in the PMO. The analyst embraced a few methods of the examination (Al-Zwainy et al, 2016) so as to investigate the survey (Al-Zwainy et al (2016 b).

3. Results and Discussions

Evaluated questionnaire results were analyzed using Microsoft Excel 2016. In the questionnaire form the first question is in Table (1).

Table 1: Analysis Results of First Question

Details	Percentage of Answers (%)	Answers
What is the possibility of doing business with the communication management software for the user	10%	Difficult
	90%	Easy

All samples of the study agreed that the CMS is not difficult by 90% whilst nobody chose difficult, (10) %. Moreover, in the questionnaire form the second question is illustrated in Table (2).

Table 2: Analysis Results of Second Question

Details	Percentage of Answers (%)	Answers
Does the software include all axes of interest in influencing the (cost, time and quality)?	0%	No
	25%	Approximately
	75%	Yes

The outcomes demonstrated that seventy-five percent consider tests (75) % were affirmed that CMS incorporated all tomahawks

of enthusiasm for affecting the cost, time and quality, however a fourth of study test indicated it was roughly 25%. The scientist noticed that the outcomes are adequate to depict the CMS two-some in impacting the time, cost and quality. The third inquiry in poll shape is appeared in Table (3).

Table 3: Analysis Results of the Third Question

Details	Percentage of Answers (%)	Answers
Does the software achieve the goal that was designed for it?	0%	No
	15%	Approximately
	85%	Yes

Most examples of the study appeared (yes) by 85% about accomplishing the CMS as an objective that was intended for it, while 15% of study tests appeared, roughly. These outcomes demonstrate that CMS is effective and has accomplished the coveted objective. The fourth inquiry in poll shape appeared in the table (4).

Table 4: Analysis Results of the Third Question

Details	Percentage of Answers (%)	Answers
Communication management software achieved accuracy in assessing the reality of the communication in the (PMO)	45%	Excellent
	50%	Very good
	5%	Good
	0%	Medium
	0%	Bad

Results demonstrated that most answers of study tests clarified great (50) % about CMS precision to assess the truth of CMS in PMO, ultimately, phenomenal by (45) %. Through outcomes, the specialists found that CMS is great to assess the truth of CMS by half. The fifth and 6th inquiries in the survey frame are appeared in Table (6)

Table 5: Analysis Results of Fifth and Sixth Questions

Details	Percentage of answers (%)	Answers
Importance of communication management software in the (PMO) raises the performance and reduces the time and cost in the communication between the (PMO) administration and senior management.	20%	Excellent
	53%	Very good
	27%	Good
	0%	Medium
	0%	Bad
Importance of communication management software in the (PMO) raises the performance and reduces the time and cost in the communication between (PMO) administration and customer	30%	Excellent
	50%	Very good
	20%	Good
	0%	Medium
	0%	Bad

Examination of the outcomes demonstrated the significance of CMS in the PMO in expanding the execution and lessening the time and cost in the correspondence among the PMO organization and client additionally between PMO organization and higher administration. Most answers of the examination test communicated a decent (half) at that point took after by brilliant (30%). The seventh inquiry in the poll frame is appeared in Table (7).

Table 6: Analysis Results of Seventh Question

Details	Percentage of Answers (%)	Answers
Importance of communication management software in the (PMO) it raises the job performance between the staff of the (PMO)	20%	Excellent
	50%	Very good
	20%	Good
	10%	Medina
	0%	Bad

After effects of investigation demonstrated that half of the examination tests (half) communicated great about the significance of CMS in PMO to expand the activity execution among individuals from PMO, while a quarter of study tests (20%) said phenomenal, at that point took after by great (20%). From the examination of the aftereffects of the considerable number of inquiries of the assessed poll, the analysts presumed that proposed PC programming (CMS) is great in PMO and are additionally simple to utilize. The CMS attempts to decrease the exertion, time and cost additionally enhances the execution of PMO.

4. Conclusions

This study is the first effort that converges between communication management and Project Management offices practices in the Republic of Iraq. Researchers reached the following conclusions:
The management of communications in project management offices is considered an effective means of improving the efficiency of their performance. The software has built to improve the Iraqi communication management in the construction sectors; this software was built by visual studio 2016. The assessment and confirmation of the software have made by its use to an example of PMO, communications software precision in evaluating the truth of the communication .The significance of the program to performance, it decreases the time and cost of the management of PMO and senior management that is very good. Communication management software achieved accuracy in assessing the reality of the communication in the (PMO) with 45% Excellent and 50% very good. Importance of communication management software in the (PMO) raises the performance and reduces the time and cost in the communication between the (PMO) administration and senior management is very good 80%. Communication Management Software CMS attempts to decrease the exertion, time and cost additionally enhances the execution of PMO.

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