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The relation between the cost impact and mismanagement in the Middle East construction projects

Key words: project management, mismanagement, construction projects, brainstorming, cost, expert, Middle East, Likert scale

Introduction

Project management field nowadays in spite of rapid progress but there are a number of negative issues still affects managing the construction projects which in turn affects the cost of the project, for example, one of the reasons that affect mismanagement before the implementation stage start is starting from the architectural design of the project, architecture establishes a detailed plan for the project when an inadequate architecture is defined; there is an insufficient basis for checking the design during the execution stage. A large number of defects that should have been eliminated in earlier phases such as architecture design, inadequate planning, and inaccurate cost estimation, it is important to avoid the cost overrun or bad impact of the cost during the implementation.

Statement of the problem and objectives

The cost deviation, delay for delivery and non-compliance with the required technical specifications in addition to lack of awareness to the importance of the complementary role of project parties are the key problems accompanied with Middle East construction projects. The fieldwork of this study is practical and close to the project's environment, in order to achieve the main objectives.

The main reason to perform this study is the large and obvious deviation in achieved objectives of the project against the other planned. So, the research focuses on finding the main reasons of mismanagement of the execution part of the projects lead to cost deviation and obtaining the agreement level number according to Likert scale quintet.

Project management

Managing, art, and science of coordinating people, equipment, materials, money, and schedules to complete a specified project on time and within approved cost is the crucial mission and challenge to achieve the successful projects. Much of the work of a project manager is organizing and working with people to identify problems and determine solutions to problems. The management of a project requires the coordination of people and information. Coordination is achieved through effective communication (Oberlender, 2000).

All projects have common characteristics: every project has a scope, budget, and schedule. Projects also differ. Understanding how projects differ and what that difference means to the management of the project is critical to successfully managing a project. Large, complex projects need project management tools, systems, and processes that are very different from the small and less complex project (Darnall & Preston, 2013).

The importance of a project management process

Projects have become more common in companies, and expectations are higher and higher in terms of performance (time, cost, specifications). It is therefore important to have a project process in place that helps us achieve the expectations that the organization places on us. Projects are always tight on time and budget. The trick is to know how to balance these, together with the element of quality, to achieve a successful result (Petersen, 2013). Due to the increased cost and complexity of projects,

the interest in developing and applying good project management principles has gained considerable attention from owners, designers, and contractors. Numerous organizations have made significant contributions related to project management by conducting research, sponsoring workshops and seminars, and publishing technical papers (Oberlender, 2000).

Finally, the realization of project objectives requires systematic planning and careful implementation.

To this purpose, the application of the tools, skills, and techniques supported by exact knowledge in the project environment, refer to project management and led to a successful project.

Definition of construction projects

The construction industry serves the human needs by building new structures and adding to, altering, repairing, and maintaining existing structures. These structures include but not limited to buildings, highways, bridges, dams, power plants, refineries, airports, railroads, docks, canals, levees, sewage treatment plants, and many others (Rajendran & Kime, 2015).

The construction project aims to create something unique, and the differentiate of this the industry of construction from other are industries is that its project is built on-site, and has special characteristics like limited on time and cost.

Construction projects are complex, time-consuming undertakings. The development of a project typically consists of several stages requiring a diverse range of specialized services. To some extent each project is unique – no two jobs are ever exactly the same (Sears, Sears & Clough, 2008).

Characteristics of a project

The main characteristics of a project are a create objective, usually the involvement of multi-departments and experts and professionals, limited time, cost and performance requirements, a defined life cycle with a beginning and a handover, generally doing a project have been never doing before.

The cost estimation

Estimate costs is the process of developing an approximation of the cost of resources needed to complete project work (PMBOK, 2017). There are several ways to estimate the cost of the construction project: simple and detailed. The process of estimating cost is usually done during the design stage, which should take a long time and the designer must give attention to all details. Through practice, it has been shown the big deviation in the cost, which effects on most of the construction projects for various reasons. The increased costs resulting often come from additional works on the project, and it caused a delay and disruption of the project up to stop the works in the project, which leads to disputes and claims.

Hypothesis and limitations

In order to find the relation between the cost impact and mismanagement, this study achieved based on the hypothesis which states the mismanagement of the construction project is the main reason of cost deviation.

Construction industry professionals surveyed for this study were geographically concentrated in the Middle East countries.

Methodology and techniques

The field work goes through multiple stages and the use of techniques: brainstorming, and open interviews with experts. In order to identify the problems that lead to mismanagement of the implementation process, brainstorming goes through several stages, the first of which is individual interviews to explain the main idea and objective of the study. The second meeting will be a meeting of all individuals for a useful brainstorming session that will be of importance to the study. Interviews with experts identify the most important reasons obtained by brainstorming session by meeting and listening to important experts in the field of construction and related specialties. The work was done in two countries in the Middle East using various methods to collect results by traveling, meeting with experts, social media to make the first contact and get opinions, and e-mails. The statistical calculations are achieved in order to obtain the agreement level number according to Likert scale quintet.

First technique (brainstorming)

Original brainstorming as a technique was first introduced by Alex Osborne in the 1930s. It is a method used in groups in order to support creative

problem-solving, the generation of new ideas and greater acceptance of proposed solutions (Balackova, 2003). In addition, it is one of the most popular techniques for enhancing the number of ideas or solutions to a problem is that of brainstorming developed and designed to foster idea generation by the usage of four rules (Osborn, 1957):

- come up with as many ideas as you can,
- do not criticize one another’s ideas,
- free-wheel and share wild ideas,
- expand and elaborate on existing ideas.

The main result of a brainstorm part may be a complete solution to the problem, list of ideas for an approach to a subsequent solution, or a list of ideas resulting in a plan to find a solution, moreover the brainstorming can be used in project management, team building (the figure, Ozmen, 2006). Building on ideas is important and the possibility of developing in the ideas of others and to come up with new ideas. In meantime the quantity is more desired than quality, the concentration on the brainstorming part is to generate the largest amount of ideas, no matter what the quality; ideas

exotic and irrational are also acceptable. No criticism shall not assess any of the generated ideas in the first phase of the session because critique or evaluate of any idea for the participant will make them lose follow-up and distract attention to try to create new ideas. One recent study examines the role of the rule “not to criticize” directly in a brainstorming setting. Conducted in both the United States and in France, gave participants in the condition the typical brainstorming rules including the admonishment “not to criticize” or the latter rule was changed to one that emphasized that they should debate, even criticize, one another’s ideas (Feinberg & Nemeth, 2008).

Research brainstorming in the case study

The brainstorming can be either achieved by individuals, groups or both (Ozmen, 2006). In the case study, the brainstorming achieved in the way of individual and group brainstorm to find the causes of mismanagement of the project execution part.

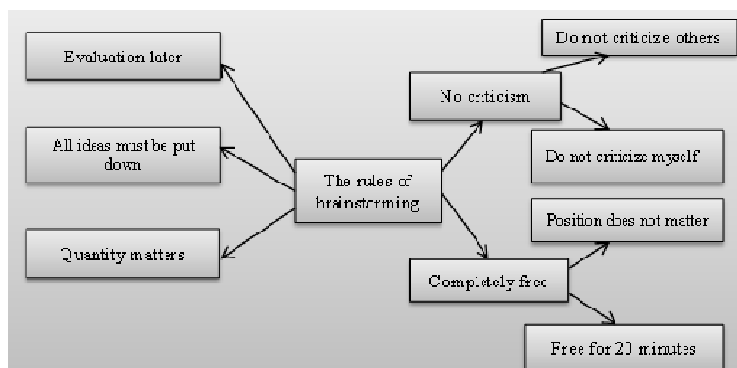


FIGURE. Example of simple mind map: the rules of brainstorming

A good number of participants for brainstorming are between six and 12 people (Balackova, 2003). The participants in the brainstorming session are 12 persons from different field and specialties. They have suitable and variety of characteristics in the line of construction project requirements.

Brainstorming session conducted in two countries from the Middle East, each meeting include by six persons and before the brainstorming session begins, the detailed explanation offered about the technique and its controls and gives a clear description of the case study to all participants in the meeting. In the end, it gives positive results and significant paybacks in the success of the task.

The brainstorming session is benefited from all parties of the project, where it is to take advantage of all the expertise which involves in the project life cycle from perspectives of contractor and owner. Tables 1 and 2 show characteristics of the participants.

TABLE 1. Illustrate the area of expertise for participants characteristics (own studies)

Area of expertise	Public area	Private area
Planner	1	1
Senior	1	–
Manager	2	1
Surveyor	1	–
Designer	1	1
Financial	1	–
Supervisor	–	2

The brainstorming session consists of two stages, individual consult, and group. Individual meetings were held with the participants as well as e-mailed and benefited from their long experi-

TABLE 2. Illustrate expertise in years for participants characteristics (own studies)

Expertise (years)	Public area	Private area
10–15	1	1
15–20	1	1
20–25	1	2
25–30 and more	3	2

ence in order to meet a general meeting to identify and discuss the main reasons. During the two individual meeting was identified the most important reasons linking luck management and cost to the execute of the construction projects, in other words, deviations of cost due to mismanagement. The participant's then conduct a review to assess the results that it is obtained. Moreover, the numbers of problems are 22. The problems identified at this stage will be displayed on the subsequent technology (technique) for the completion of the practical study.

Second technique (interview with experts)

Reviews the meeting conducts with experts by visiting the site and making a reality. The duration to achieve this part is three months because it is not easy to arrange an appointment with the experts and to make individual and group meetings. The experts were from several fields of construction projects: managers of construction projects, planning engineers, architects, accountants, surveyors and civil engineers (Table 3).

The experts meeting conducted in two countries each meeting contains eight experts. Who has actual experience of not less than 25 years and more. They believe these 22 reasons have a signifi-

TABLE 3. Illustrate specialization of the expert in two countries (own studies)

Specialization of the expert	Number on Meeting 1	Number on Meeting 2
Managers (civil, architects)	2	1
Planners	1	2
Civil engineers	2	2
Surveyors	1	1
Architects	1	1
Accountants	1	1

cant negative impact on the management of the execution phase.

Statistical analysis of the data collecting – Likert scale

The various kinds of rating scales have been developed to measure attitudes directly (i.e. the person knows their attitude is being studied). The most widely used is the Likert scale. Likert (1932) developed the principle of measuring attitudes by asking people to respond to a series of statements about a topic, in terms of the extent to which they agree with them. Likert-type or frequency scales use fixed choice response formats and are designed to measure attitudes or opinions (Bowling, 1997; Burns & Grove, 1997). In its final form, the Likert scale is a five-point (or seven-point) scale which is used to allow the individual to express how much they agree or disagree with a particular statement (McLeod, 2008).

The respondents are asked to indicate their agreement level with a given statement by using an ordinal scale (strongly agree/agree/do not know/disagree/strongly disagree).

Results

A five-point scale which is used to allow the individual to express how much they agree or disagree with a particular statement, the interval is 0.8. The reasons refers to the direct relation and in a direct relationship between the cost deviation or impact and mismanagement (Table 4).

TABLE 4. Illustrate the level according to Likert scale quintet (own studies)

Level of agreement	Weight
Completely disagree	1.0–1.80
Disagree	1.81–2.60
Neutral	2.61–3.40
Agree	3.41–4.20
Completely agree	4.21–5.00

Statistical procedures for data have been completed, where the extent of the experts' approval and rejection of the reasons and their impact have been completed. The reasons (22) for the cost deflection of many projects should be noted in the implementation of projects. Table 5 presents the field response of experts on the Likert scale.

Conclusions

The study conducted an open interview with the experts to assess and evaluate the results of brainstorming.

The participants in the following techniques: brainstorming, open interviews with experts were defined and classified according to the area and years of expertise and specialization.

TABLE 5. Illustrate the most effective reasons (own studies)

No	Description	Strongly agree (5.0–4.21)	Agree (4.20–3.41)	Do not know (3.40–2.61)	Disagree (2.60–1.81)	Strongly disagree (1.80–1.0)
1	Inadequate architecture design		*			
2	Inaccurate the estimation of the cost	*				
3	Misunderstanding of project objectives and the target		*			
4	Inadequate of the planning	*				
5	Ineffective of the decision making process and application			*		
6	Activate the process of the grant rewards and incentives in order to motivate the work team				*	
7	Poor of the funds for training and continuous development the engineers and administrators		*			
8	Poor of the funds for investigations, archiving, and data collection	*				
9	The inability of the company to meet project requirements, because of the specification of the projects			*		
10	unprofessional executive manager of the project			*		
11	unprofessional project teamwork	*				
12	The absence of an organizational structure for the enterprise	*				
13	The updating of the execution plan is not activate			*		
14	The contractual procedures for subcontracting are not adequate and not clear		*			
15	The performance evaluation ability are not appropriate					*
16	supervision committees are non-professional	*				
17	Arrange the site meetings weekly to discuss the updating	*				

TABLE 5 cont.

No	Description	Strongly agree (5.0–4.21)	Agree (4.20–3.41)	Do not know (3.40–2.61)	Disagree (2.60–1.81)	Strongly disagree (1.80–1.0)
18	The importance of communication between the designer and the team			*		
19	Delayed of the cash flows by owners	*				
20	Arbitrary and individually works		*			
21	The bureaucracy in bidding tendering method			*		
22	The differences in the material prices					*

The results consist of 22 reasons (problems), these reasons have a significant negative impact on project management in the execution phase according to the results of the brainstorming and interviews with experts.

Conduct the brainstorming technique in order to find the real reasons for the execution phase mismanagement.

The study collected the most agreed reasons that make a real relation between the cost impact and mismanagement in construction projects.

The checking of the hypothesis of the study by using the statistical method has been done.

After the statistical analyses have been finished, the mentions reasons (1, 2, 3, 4, 7, 8, 11, 12, 14, 16, 17, 19, 20) are fully agreed with the experts and the reasons (6, 15, 22) are disagreed, the rest of the reasons are in the neutral area.

Finally, the reasons have confirmed the hypotheses of the study by using descriptive statistical method.

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Summary

The relation between the cost impact and mismanagement in the Middle East construction projects. The creations of construction projects firstly try to achieve several specific goals. Effective projects are believed

when these goals achieved. The principal concerns are to cross the downsides and defects. The stage of the performance project may be the most significant, crucial and drains of the resources through the project life cycle, its dependence on monitoring by professional in order to exceeded things blocking the path and accomplish the project plan exactly. The targets of the study are to diagnosis the actual reasons and locating the relation of mismanagement of the project execution stage and measure their influence on the cost. The study achieved and diagnoses many problems that have a negative impact on the projects management implementation as well as the effects of the cost by using many ways to reaching the target. There are 22 problems it is the main reasons that deviation the cost plus they obtain agreement level number according to Likert scale quintet.

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