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The Impact of Changing Project Organization Structure on Project Performance

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Abstract. Instigating changes to project organization structure during the project execution could disrupt many project processes and influence project performance. The purpose of this study is to investigate a particular problem occurred in completed construction projects in UAE market. The problem appeared due to unnecessary changes and slow or inadequate response to change by senior managers in contractor's project organization structure. These changes had negative impact on the project management roles and responsibilities, additional cost and time impact. Furthermore, there were negative consequences on the performance of the project's team and their effort to create new ideas as well as their innovation inside the construction project that they are involved. The qualitative methodology is used in this study through investigating five case studies for construction projects that completed in UAE market along with extensive literature review that focused on the different sides of the problem as well as an interview with ten members of contractor's project management and senior managers to examine the impact of the problem on project performance and team effectiveness. The main findings indicate that having clear and defined roles and responsibilities have positive impact on project performance and team effectiveness. Moreover, the contractor's senior managers have a vital role in establishing, managing the project organization structure and ensuring that any changes to the structure are dealt with effectively. This would enable the project to progress according to plan, reduce project activity reworks and address any weakening communication and cohesiveness between project team members.

1. Introduction

Projects are conceived and initiated by organisations to deliver value and realise benefits. The way such projects are organised and managed is, therefore, of critical importance. Shirazi et al. (1996) [1] explained that having a project organization structure that suits the project environment and includes the different project parties is an important decision that senior management need to make. The reason being that the establishment of an appropriate organization structure for construction projects that reflects the project's requirements and environment impacts project success through ensuring the adequate and clear roles and responsibilities of the project team. Therefore, managerial decisions to change this structure during project progress, due to internal or external influences, is very critical and could impact, negatively or positively, project performance depending on many factors such as the time of change, level of change, number of members changed, the policy followed for change, firm organization

structure and its support for the construction project as well as the type of the project structure. A possible negative impact of changes in the project organization by the firm's management could lead to several consequences such as role conflict and role ambiguity among project team; lack of communication between different site team; increasing of the site rework due to absence of full knowledge and project experience for the changed roles and positions and inadequate control on different project resources and increase of material wastage.

The main aim of this study is to investigate the dynamics of the contractor's project organization when changes are introduced to the project structure after the project has started. The research objectives will be investigated in detail:

1. Critically examine the underlying reasons that drives change in project organization structure.
2. Investigate the role of top/senior managers and project management team during establishment and change of project organization structure.
3. Examine the impact of project organization structure changes on project management team dynamics and project performance.

2. Project Organizational Structure

Project organization structure is considered as an important and critical dimension in the management of construction projects. Tetrick and Camburn (2004) [2] defined the organization structure where individuals interact with each other in effective design chart that maps team structure, employment relationship, specialization and centralization that impacts the effectiveness of the organization structure parties. Furthermore, Tran and Tian (2013, p.230) [3] explained that organization structure as the arrangement of duties required to complete a job. Ubani (2012, p.1284) [4] defined the organization structure as a management framework to oversee the different construction activities of a project or any other organization's activities. Tatum (1986, p.259) [5] confirmed that design of project organization structure adds means of positions requirements, coordination, and location of decision-making.

Selecting the best and suitable organization structure for the project is considered critical issue not for establishment of project organization structure only but also for the project success at all. Furthermore, construction projects are projects with special nature and therefore it deserves effective organization structure [4]. Additionally, selecting the suitable organization helps the organization to achieve its objectives and goals [6]. Payne (1993, p.240) [7] stated that "incorrect project structures lead to frustration, low morale and poor motivation. It is essential to get the choice of structure as near correct as possible". Ling, Dulaimi and Ho (2012, p.235) [8] concluded in their study of construction projects in UAE that many projects, typically, face cost and time overrun due the human resources, project management and environmental factors. They emphasized that selection the right personnel from the start of the project is a critical step for project success to a large extent as it builds strong work relationship between members of the different project team, at all project levels. While Dumitru (2011, p.186) [9] pointed out that "Choosing an appropriate structure for the project to be implemented is not only necessary, but, moreover, may prove fatal to the extent that is [project] not obtained".

3. Management Roles and Responsibilities towards Project Organization

Contractors use project organization structure to control project's performance and workflow. Therefore, senior management play significant role during the establishment and maintenance of project structure over the project span to meet the organization's objectives. Furthermore, designing effective project organization by managers can increase the potential for optimum levels of project performance (Tatum 1986, p.346) [5]. Simultaneously, Shirazi, Langford and Rowlinson, (1996, p.199) [1] explained that one of the important roles of the top management in construction projects is to develop a project organization structure that suites the project environment and includes different

project parties. Stare (2011, p.18) [10] concluded that management's attitude and priorities the most influential factors of project success. Tran and Tian (2013, p.234) [3] pointed out that designing suitable organization structure helps senior management find and identify the talent to be added to the organization which have positive impact on corporate objectives and goals. Tatum (1986, p.355) [5] stated that project managers can play vital role to assist senior managers in setting the project's structure by offering their experience to shape and influence the design of project structure. However, Taylor (2006, p.180) [11] asserted that project managers have no influence on the way the organization is structured but they need to understand the nature and rationale of their project structure to be able to deliver better results.

4. Changes in Project Structure

Tatum (1986, p.347) [5] highlighted some factors driving changes to the project organization structure such as dynamic changes in project phases, changes in project goals, difficulties in the project performance or certain dynamic project situations which require the reorganization of project structure. Meantime, Ibbs, Wong and Kwak (2001) [12] stated that it is very common occurring changes in projects which may be beneficiary or ineffective and it affects the cost and duration of the project. Therefore, project management team should have effective ability to respond to changes in the project to reduce the impacts to the project. They added that lack of communication; integration and changing the project environment are common project change drivers. Similarly, Payne (1993, p.239) [7] demonstrated that change in project management structure may be introduced by top management to facilitate efficient and effective performance of the projects.

Change in project organization structure would impact negatively or positively on the project performance depending on the way the organization managers follow to response to change and how they implement change in the organization structure. Wah (1999 Cited in Sakalas and Venskus 2007, p.25 [13]) stated that unfortunately, strategic policy decision makers are not paying heed to the potentially negative impact on employee morale and work satisfaction. Bresnen, Goussevskaia and Swan (2005, p.39) [14] focused on the implication of change in projects which may interfere with the existing project management practices and as a result it can disrupt the power in the project and project goals. Furthermore, Middleton (1967, p.81) [15] highlighted that shifting personnel from project to another may disrupt and affect the training and knowledge on new people which affect negatively on their development and employment growth.

Tatum (1989, p.602) [16] studied the impact of organizing on the innovation and concluded that organization structure elements such as priorities, policies and flexibility in the team size and coordination between them are considered among the critical factors that foster the innovation in the construction industry. Furthermore, complex projects need technological innovation to overcome complex processes and activities. Lam (2011, p.163) [17] recognized that introducing new technologies as a part of innovation process has often created challenges that required a change to structures and management practices to align with the innovation process. Meantime, Brix and Peters (2015, p.29) [18] stated that innovation process with high degree of uncertainty in construction projects produce change in the main elements of the organization structure.

Design of project structure, Nahod and Radujković (2007) [6] argued, should consider three significant attributes, flexibility, efficiency, and coordination. Tatum (1986, p.271) [5] argued that the establishment of project organization structure process is to

1. Define and set out the project objectives.
2. Define and set out the line management organizations and authority outlines.
3. Define available resources and the requirements of each position for all staff levels.
4. Establish roles and responsibilities for all project staff.

5. Provide and maintain coordination and communication within the project organization.
6. Maintain planning, reporting and monitoring procedures.

5. Research Methodology

The research is conducted in the United Arab Emirates (UAE) and the sample and research method adopted reflect the nature and dynamics of the local construction industry. The nature of the research requires an approach that can be effective in providing a rich perspective created by weaving views and experiences from experts in the local industry. Opinions, perspectives observations linked to project organization structure change process require a qualitative research method using case studies and focus group to capture this complex and rich picture. Five case studies of projects are selected based on the convenience of having prior knowledge and links with their project teams (table 1).

Table 1: Sample Characteristics

Project	Organisation	Type	Location	Interviewees Code	Project Value (AED)
A	DGD	International	Dubai	M1 & M2	650M
B	CRA	International	Abu Dhabi	M3 & M4	90M
C	DW	International	Dubai	M5 & M6	180M
D	SC	Local	Dubai	M7 & M8	250M
E	NC	Local	Sharjah	M9 & M10	125M

6. Findings and Discussion

The analysis of the case studies has indicated that the aftermath of the financial crisis in 2008/2009 is still affecting the industry that continue to struggle with oversupply of residential and commercial properties. The analysis of the case studies will be analyzed under several subheadings as below.

6.1 Design of Project Organization Structure and impact on Performance

One of the most important factors that helps to design appropriate project organization structure is the cooperation between the project manager and the company top management to establish efficient and effective structure that matches the project conditions and requirements. In case study project (A), it was clear the cooperation between the project manager and top management in the early stages of the project which assisted in establish agreed project structure that impacted positively on the performance of the project before the change to the structure had been occurred. On the other side, the case study project (B) showed that the assigned project manager in later stages was able to manage the change in the project structure and delivered improved performance. Furthermore, case study (B) showed that the structural change has led to improving communication between the contractor and the consultant which expedited all approvals and orders that were delayed by the original organization structure. Meantime, case study (C) experience significant delay and pressure to adopt new technology. This was achieved by recruiting/changing staff, including changing the construction manager, and changing the organizational structure led to positive impact. This project managed to improve productivity and progress to be completed on time and to client's satisfaction.

Case study project (D) showed that the project was progressing smoothly until the project organization structure had been changed and new construction manager was hired. Similarly, project performance suffered when both the project manager and construction manager of the case study project (E) decided to leave the company (NC). The new project manager and construction manager introduced to the project without enough lag time to transfer the project history which led to lack of

communication between the new staff and the other project parties such as the consultant and client. Also, the new change meant that the project team needed to rebuild and establish new norms and communication channels which led to significant delays,

6.2 Implementing change in Project Structure and Its Impact on Performance

Changes to the contractor's project organization structure are common in the construction industry and the time and nature of this change is significant on the project performance. Inappropriate implementing change or slow response towards the change by top managers in the construction project organization structure would impact on the performance of the project. In case study project (A), there was no proper process implementation for change in the project structure by the top management of the company (DGD) as the construction manager role was vacant in the new structure which impacted negatively on the project progress, communication within the project team, and consequently on the project's performance due to the absent of coordination role. Moreover, the delay of (CMA) company to assign qualified project manager in case study project (B) had a lot of negative consequences on the project accomplishment as scheduled. Furthermore, changing the project manager who represents the head of the project organization structure for three times was disruptive which not only had impact on the project but also on the relationship between the contractor and consultant as well as the client.

On the contrary, the action of top management of (DW) company and time of change in project (C) were appropriate and effective to compensate the delay that occurred in the start of the project. DW quickly searched for solutions to compensate the delay such as assigning qualified construction manager and also utilized the new technology to construction industry to expedite the works in the project to complete the project as per the contract which achieved in the end of the project although the action had impact on the cost of the project.

On the other side, there was a slow action by top management of company (SC) to respond to the unexpected change to the project organization structure of project (D) when the performance of the project manager started to be affected by his poor health and such delay, the project was managed "part time", impacted on the performance and schedule of the project. The senior construction manager, who took over the project manager role in addition to his job, found it difficult to coup which impacted on the project management. Meantime, change in project (E) had a negative impact on project performance as senior management (NC) delayed the assignment of the new project manager for two months. This created a situation that undermined effective communication and the sharing of project history between the old and the newly assigned project manager. This delay in assigning new project manager led also to lack of communication between the new project manager and project team for long time which all had an impact on project progress.

The analysis of the case studies has also shown that the poor performance of project teams is one of consequences of weak management of project structure change. Poor change management in project (A) led to negative impact on the project team performance. The role of construction manager was indeed important for team building and communication. Absence of such role had impacted team communication and teamwork which undermined their ability to deliver the project to its targets. The same was clear also in project (B) due to several changes in the project organization structure in a fast-track project which created confusion between the project members and affected their ability and their effectiveness to perform their duties.

The situation in case study project (C) was different as the quick response of top management of the company led to effective change implementation and the changes in the project organization structure had positive impact on the team performance. Assigning additional staff and new construction manager from company staff had positive impact on the project team performance. Case study project (D) showed that there were stable project conditions for most of the project duration until the project manager retired. The interview discussion revealed that the project manager control on the project and team was effective, and all members of the project team cooperative and supportive. The relocation of construction manager and the hiring of a new one undermined the performance of project teams while the new construction manager is trying to familiarize himself with the corporate and project polices.

Same situation also occurred in the project (E) due to the change in the most important members of the project organization. The project manager and construction manager left the company without enough lag time to exchange the history and data of the project. The same also impacted team performance and coherence as the new staff spent some time to understand the company internal procedures and spent significant time to establish significant communication with existing staff in the project.

The analysis of the case studies showed that poor management of change in project structure have had a significant impact on project team effectiveness and performance and on their response to internal and external influences on the project. Furthermore, poor change management weakened team building requiring significant time that management could/would not offer.

6.3 Change Management Process Impact on Project Performance

Process of change management is critical for successful of change implementation to the project organization structure as any failure in process will lead to difficulties to empower the change in the construction project. Procedures of change in project organization structure of project (A) were insufficient as no change management procedures were followed by the company management. The purpose and impact of change were not shared with the project team and also no meetings were held for project team to understand the purpose of change. Furthermore, the company did not assign new construction manager to replace the old one and the company management response to the impacts of the change was also inadequate. Project (B) analysis showed that the adopted procedures followed to implement change in the project organization were inadequate where the project started quickly without giving the enough time to prepare proper organization structure. Management was also slow in ensuring a project manager is in place early to allow for effective team building and careful consideration of structure leading to several months of delay.

There was a clear procedure to implement change to the organization structure of project (C) and company managerial response to the change was fast. Moreover, the cooperation between the project management and company management was obvious which enabled the implementation of effective change process that led to the effective delivery of the project. The management of change in project (D) was also late and company internal procedure and change action were delayed for months. Moreover, the company response to unexpected change in the organization was late but implementation of change in later stage was effective through promoting the construction manager to project manager which was effective step although it was slightly slow. The company held meetings also with new construction manager and team staff to expedite the effectiveness of the communication process and to avoid the consequences of the change impact on the project performance. Therefore, the effective change management by top management enhanced the effective of implementing change and consequently has positive impact on the project performance and team effectiveness.

7. Conclusions and Further Research

This study focused on implementation of changes in the contractor's project organization structure by the top managers and its likely impact on project dynamics and performance. This study has been able to show, from the analysis of five case studies for construction projects in UAE, that effective design and implementation of project organization structure has positive impact on project performance and team effectiveness. This study also revealed also that there are many reasons behind change in the project organization structure such as improper establishment of initial project organization structure and assigning unqualified key staff. Also, the decision to adopt a new technology would lead to change in the project structure to conform and to be aligned with the new technology which need for additional resources than the old technology. Further, contractor's internal priorities that have influence their decision to allocate resources across the company's portfolio of projects which would favor projects with better cash flow or with client that has strong business relationship.

The analysis of the case studies in this research have shown that the top manager's response towards the project organization change could have a negative or positive impact on the project depending on their followed strategies, time, and the way they manage the change in the project organization

structure. Moreover, the way the senior managers manage the change in the project structure and nature of the project team relationships have shown an influence on the consequence of such change on project performance. Where senior management take fast and timely action towards the change in the project structure, following well defined organization process, have shown to positively impact project performance. However, the case studies have shown that change in the contractor's organization structure tend to have negative impact on the projects such as increase of rework, undermining communication within the project team, increase wastage of materials because of loss of control by project management and also increase role ambiguity in the project team.

This research main limitation is that it was focused on projects in the UAE where the unique construction of project organization, extremely culturally diverse expatriate staff, would have influenced their desire and willingness to accept change after the project was started. Future research can examine how such structural changes can be the trigger for innovation and adoption of unique solutions to construction challenges. Behavioral focused studies may also examine the behavior of project managers and how that would impact the smooth transition during a change process.

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