AN EVALUATION OF THE CRITICAL SUCCESS FACTORS FOR CONSTRUCTION PROJECTS IN LIBYA

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Abstract

The construction industry is one of the more important economic activities that contribute towards the economic growth of any nation. The construction industry in Libya faces serious challenges and difficulties due to fast developments and dependence on foreign experts. The current capacity of the Libyan construction industry in order to meet national housing supply needs. Recently, the country is witnessing a new construction boom that will bypass all other construction activity of the past decades. New houses, airports, ports, railways, and roads need to be built and upgraded. Hotels, office buildings and resorts are required to meet the needs of an expanding tourism industry. The main reason for conducting this study was to evaluate which critical success factors are most important in phases of construction projects. This study was in the Wadi Alhaya region in southern part of Libya. A quantitative approach was selected. As conclusion, this paper identifies ten critical success factors that are important and will impact positively on construction projects if they are focused on by all the stakeholders and it can be concluded that the critical success factors found to be most influential in this study could be utilized in future work which examines different situations and environments.

Keywords: Evaluation, Critical success factors, Construction projects, Libya.

1. Introduction

The construction industry has been characterized as dynamic in nature as a result the increasing uncertainties in technology, budgets, and development processes. In recent time, building projects are becoming much more complex and require a careful integrated process management tools and techniques.

Research on the critical success factors (CSFs) are considered to be a means to improve the effectiveness of project and to achieve project objectives. According to Morrison (2009) critical success factor (CSF) an element of organizational activity which is central to its future success. Critical success factors (CSFs) may change over time, and may include items such as product quality, employee attitudes, manufacturing flexibility, and brand awareness. Critical Success Factor any of the aspects of a business that are identified as vital for successful targets to be reached and maintained. Critical success factors (CSFs) are identified in such areas as production processes, employee and organization skills, functions, techniques, and

technologies.

The identification and strengthening of such factors may be similar. According to Sandivo et al., (1992) identified the following as most critical factors that needs special and continuous attention for a successful project: the first category of factors is a well-organized, cohesive facility team to manage, plan, design, construct, and operate the facility. The second is a series of contracts that allows and encourages the various specialists to behave as a team without conflicts of interest and differing goals. The third is experience in the management, planning, design, construction, and operations of similar facilities. And the fourth is timely, valuable optimization information from the owner, user, designer, contractor, and operator in the planning and design phases of the facility. Jaselskis and Ashley (1991) indicated that the application of management tools would enable the project managers to plan and execute their construction projects to maximize the project's chances of success. Variables in project management-related critical success factor include adequate communication, control mechanisms, feedback capabilities, troubleshooting, coordination effectiveness, decision making effectiveness, monitoring, project organization structure, plan and schedule followed, and related previous management experience (Walker and Vines 2000). Attributes under this critical factors that can impact on success of project include the communication system, control mechanism, feedback capabilities, planning effort, organization structure, safety and quality assurance program, control of subcontractors' works, and finally the overall managerial actions (Chan et al., 2004). With regard to the procurement related factors, they play an important role in the success of construction projects (Kumaraswamy and Chan, 1999). These factors consist of methods used in selecting the design team, contractor as well as the procedure adopted in selecting project team (Saqib et al., 2008). Another factor which plays an important role is client related factors. However, the characteristics of client such as client type, experience, and knowledge, a well defined project scope and project financing enable a significant contribution to the success of a project (Dissanayaka and Kumaraswamy 1999).

Project participants (capability of client key personnel, competency of client proposed team, client team turnover rate, client top management support, client track record, client level of service. Contractor related a factor is also a considerable factor which has an important role in evaluating the critical success factors in the construction industry. It can be stated here that Contractor's experience, an effective site management and cost control, cash flow, management of sub-contractor and a proper supervision of work on site are all associated with contractor related factors that can impact on the success of construction project (Dissanayaka and Kumaraswamy, 1999). In addition, qualification such as financial strength, past experience, business plan, work capacity, quality and experience of the technical personnel as well as project characteristics consisting of work schedule, type, value, duration, complexity, location of a project, contract type and variation between the contractor's bid price and the next lowest bidder's price have been associate with the capability of a contractor Al-Sobiei et al., (2005).

Delays in project completion time and increases in cost of construction projects are have been closely related to specifications and contractors' contractors' qualification such as financial, technical, experience (Koushki et al., 2005). Another significant factor plays a role in the development process is the design team related factors. According to Chan (2004), these factors and their participation commence from inception till completion of the construction. Further, Chan and Kumaraswamy (1997) stated that design team-related factors consist of project design complexity, design team experience, and mistakes/delays in producing design

documents. The authors categorized construction in to three phases: project design, project conception and project construction. Several approaches and studies agreed with that project manager related factors have also a significant aim in evaluating the success for any project in the construction industry. For instance, competency of a project manager is an important quality which has been found as influencing factor on success of construction projects. The reason is that competency is an attribute of an effective project planning, scheduling and a well structured communication (Belassi and Tukel, 1996). Other success factors associated with project manager that can impact on the project success are his or her commitment, experience and authority (Chua et al., 1999). Additionally, the ability of a project manager to facilitate team building among project players is an important factor that impacts positively on project success (Hassan, 1995). In term of work environment related factors. Walker and Vines (2000), project environment plays a significant influence on project success.

Environment has been described as all external factors that will influence construction process such as social, political, and technical system. Project environment can therefore be characterized as economic environment, social environment, political environment, and physical environment (Akinsola et al., 1997). In a research which examines environmental factors and work performance of a project manager in construction projects, Pheng and Chuan (2006) categorised working environment related critical success factors in five: Personal variables related factors, job condition related factors, project characteristics related factors, environmental related factors and organizational related factors. Factors such as materials, labour and productivity have also an important role in evaluating the success in the construction industry.

According to Pheng and Chuan (2006), an adequate material management can significantly impact on labour productivity. For example, work time can become no-productive or idle time due to lack or shortage of materials and tools at the right time and in the right place. In addition, double handling due to distance of storage can affect availability of materials. Materials quality and availability therefore can impact critically on the project success. As per labour and productivity related factors, a United Nations report (1995) stated that in ordinary situations two major sets of factors affect the site labour productivity requirements: organisational continuity and execution continuity. Organisational continuity encompasses physical components of work, specification requirements, design details etc. Execution continuity relates to the work environment and how effectively a job is organised and managed. Management aspects include weather, material and equipment availability, congestion, and out-of-sequence work. External related factors are also amongst the factors that have a great influence in the success for any projects. These factors included the nature of the industry, construction client knowledge of construction procedure, weather, and level of economic development. Failing of any success factors caused by project participants are demarcated as external causes.

Following are the identified factors that arise from the external factors, particularly from the work of (Aibinu and Odeyinka, 2006; Sembasivam and Soon, 2006; Chen and Kumarsamy, 1997). The external factors could be inclement weather condition, act of Allah, price fluctuation, slow process of Building permit, government neighbour, problem with neighbour, unforeseen site condition and civil disturbance. Those factors should be taken in account in order to avoid any problem within construction project process. Thus, this paper is focused on determining the CSFs in Wadi Alhaya region which is located in the southern part of Libya.

2. Research Methodology

The study was carried out in the Province of Wadi Alhaya in Libya as shown in Figure 1. Additionally, the geographical areas selected include the locations where construction activities are high. Questionnaire survey was adapted from Saqib et al., (2008) and used as a technique for collecting the data. The distribution of the survey instrument commenced on 1st August 2010 in Wadi Alhaya Province in Libya and the survey was completed on 25th December 2010.

The questionnaires were in prepared in English language and then the researchers have translated it into Arabic language to ensure getting enough feedback because most of the contactors who are running their business there are mostly speaking the local language (Arabic language). Moreover, the data were collected by firstly using close ended self-administered questionnaires. And then, this study was employed survey method to obtain the perceptions of the respondents toward the critical success factors for construction projects in Libya. Out of the 80 administered and only 44 useable questionnaires were returned, which produced 52.5% responds rate which is a quite high when compared with previous studies. The collected data were analyzed with aid of Statistical Package for Social Science (SPSS) version 17.0. The data were analyzed in the following order. First, the demographic profile of firms and respondents were analyzed using descriptive statistics. Followed by, indices the Relative Importance Index (RII).

Figure 1 – Map shows the study area

3. Analysis and Discussion

3.1 Respondents background

The first part of the questionnaire was designed for the purpose of eliciting information of the respondents' background where out of 44 employs who participated in this study, 72.3% were working in public sector while 27.7% were working in private sector. In term

of qualification, Figure 2 illustrated that 2 (4.5%) had a Diploma or certificate degree. Respectively, 17(38.6%) had bachelor or equivalent degree, 23 (52.2 %) had Master or above degree. while 2 (2.4%) had no certificate.

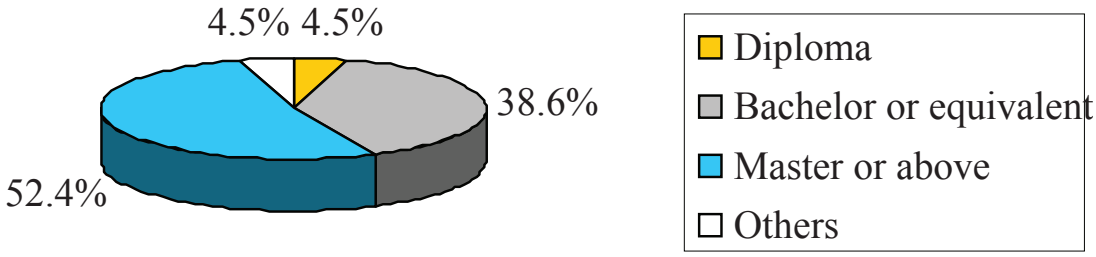

Figure 2 – Respondents Qualification

The information of the respondents' years of workers' experience was also elicited. The data shows that most workers had experience from 6-10 years. Figure 3 indicates that 9 (20.5 %) had been working between 1-5 years, 27 (47.7 %) illustrated that they had been working from 6-10 years, while 13 (29.5 %) had worked for 11-15 years and just 1 (2.3 %) had worked more than 20 years.

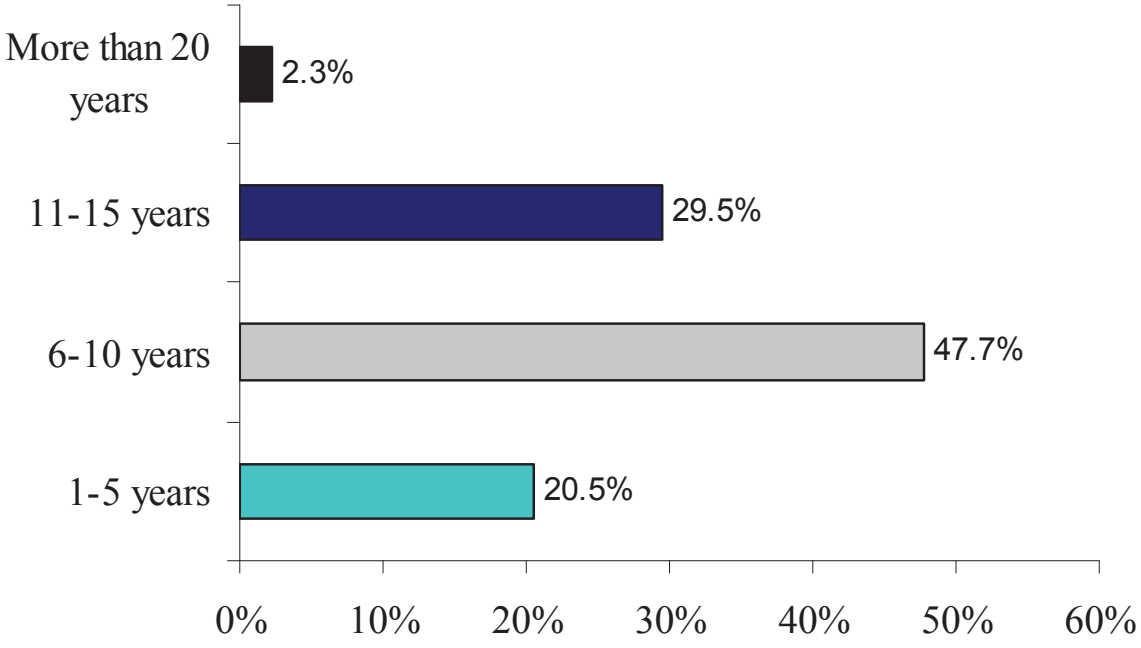

Figure 3 – Working Experience of Years Respondents

3.2 Critical Success Factors for Construction Projects in Libya

The data used for analysis of evaluate critical success factors were obtained from the questionnaire survey. Ten main categories of factors were included in questionnaire were critical success factors which relates to project management consist of twelve items in the questionnaire. The result of the RII shows that eight items are very important to success of a project in Libya. Feedback capabilities is ranked first with 0.682, followed by project monitoring, coordination effectiveness and design adequate organization structure which are ranked second with 0.659. Decision making effectiveness and plan and schedule are ranked third with 0.636. Training team work to skilled is ranked fourth with 0.630. Control and mechanisms is ranked fifth. The sixth critical success factor relates to procurement and consists of four items in the research

questionnaire.

The most important among these items is client experience which ranked first at 0.722. Next is project contact mechanism which was ranked second at 0.653. The third important item is evaluating and determining the priority to the requirements of project which was ranked at 0.631. The item with least importance is project bidding method which was ranked at 0.574. The third critical success factor which relates to Client consists of twelve items in the questionnaire. The most important factors resulting from the RII are five. The most important among these five items are identified. First, allow adequate time to project and client's ability to make decision and has 0.721. Client experience is next with 0.688. Providing information to team work was scored 0.682, followed by client's knowledge of construction project organization which was scored 0.670. Client's ability to define roles was scored 0.665. The fourth critical success factor relates to contractor and consists of seven items. Five from these items were scored higher than the others.

The most important is the highest which is contractor experience having 0.784. The second is supervision having 0.682, followed by speed of information which was scored 0.670. Next is effectiveness of cost control system having 0.631 and followed by site management having the least importance and is scored 0.597. The fifth critical success factor relates design team and consists of four items in the research questionnaire. All the items were scored high. The most important is quality relationship between team having 0.75. Next is design team experience which was scored 0.693, followed by mistake and delays in producing design documents was scored 0.625. The item with the least important is project design complexity which was scored 0.608. The second success factor relating to project manager consists of eight items in the questionnaire. The most important items for success of project in Libya are identified. Leadership skill by the Project Manager is ranked first with 0.761. The second important item is Project Manager's efficiency ranked second with 0.756. The third is Project Manager's experience ranked third with 0.75. Sufficient salary of Project managers is ranked fourth with 0.733. Project Manager Commitment to quality cost and time is ranked fifth with 0.705. The eight critical success factors which relate to work environment consist of seven items in the survey questionnaire. Five out of these seven are scored high by the respondent. The most important item in the factor is adequacy of funding ranked at 0.744, followed by political environment which was ranked at 0.670. Next is commitment of all parties to the project which was ranked at 0.664, followed by the availability of skilled labour ranked at 0.648, lastly, technology availability was ranked at 0.636. The ninth critical success which relates to materials consists of two items in the questionnaire. All items were scored high by respondents.

The most important item in this factor was the shortage in materials where it was scored 0.75, followed by quality of materials which was scored 0.739. The seven critical success factors were related to labour and productivity and it was consisted of three items in the questionnaire. The entire three items were scored high but the most important item amongst them was the labour productivity which was scored 0.761. Subsequently, is labour supply which was scored 0.733, and the least important was scored 0.563. The tenth critical success factor related to external factors and consisted of four items. All these items were scored high. The highest amongst them was the regulatory code and building code, it had scored 0.568. The second was weather conditions and it was scored 0.466 while the third item was scored 0.449. Table 1 illustrates these factors with their ranks in term of their priorities.

Table 1 – Critical Success Factors for Construction Projects in Libya

Critical Success Factors	RII	Ranking
Critical Success factors Related to Project Management		
Feedback capabilities	0.682	1
Project monitoring, Coordination effectiveness & Adequate organization	0.659	2
Decision making effectiveness and Put plan and schedule	0.636	3
Training team work to skilled	0.630	4
Control and mechanisms	0.619	5
Critical Success Factors Related to Procurement		
Client experience	0.722	1
Project contract mechanism	0.653	2
Evaluate and determine the priority to the requirements of the project	0.631	3
Project bidding method	0.574	4
Critical Success Factors Related To Client		
Allow adequate time to project& Client's ability to make decision	0.721	1
Client's experience	0.688	2
Provide information to team work	0.682	3
Client's knowledge of construction project organization	0.670	4
Client's ability to define roles	0.665	5
Critical Success Factor Related To Contractor		
Contractor experience	0.784	1
Supervision	0.682	2
Speed of information flow	0.670	3
Effectiveness of cost control system	0.631	4
Site management	0.597	5
Critical Success Factors Related to Design Team		
Quality of relationship between team	0.75	1
Design team experience	0.693	2
mistakes and delays in (producing) design documents	0.625	3
Project design complexity	0.608	4
Critical Success Factors Related To Project Manager		
Leadership skills of project manager	0.761	1
Project manager's efficiency	0.756	2
Project manager's experience	0.75	3
Comfortable salary to project manager	0.733	4
Project manager's commitment to meet quality, Cost & Time	0.705	5
Critical Success Factors Related To Work Environment		
Adequacy of funding	0.744	1
Political environment	0.670	2

Commitment of all parties to the project	0.664	3
Human Skill availability	0.648	4
Technology availability	0.636	5
Critical Success Factors Related To Materials		
Shortage in materials	0.750	1
Quality of materials	0.739	2
Critical Success Factors Related to Labour and productivity		
Labour productivity	0.761	1
Labour supply	0.733	2
Equipment availability and failure	0.563	3
Critical Success Factors Related To External Factors		
Regulatory changes and building Code	0.568	1
Weather condition	0.466	2
Problems with neighbours& Unforeseen ground conditions	0.449	3

4. Conclusions and Recommendations

This paper identifies ten critical success factors that are important and will impact positively on construction projects if they are focused on by all the stakeholders and it can be concluded that the critical success factors found to be most influential in this study could be utilized in future work which examines different situations and environments. For example one could look specifically at industrial facilities, or private sector projects. This study has also recommended that the methodology used in this research should be applied to other areas or cities in Libya so that more influential and impact factors can be discovered which will improve the construction industry development in Libya or even in the other Arab countries.

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