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FACTORS AFFECTING PERFORMANCE OF CONSTRUCTION PROJECTS IN UNSTABLE POLITICAL AND ECONOMIC SITUATIONS

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ABSTRACT

The construction industry has complexity in its nature because it contains a large number of parties as clients, contractors, consultants, stakeholders, shareholders, regulators and others. Construction projects in Iraq suffer from many problems and complex issues in performance such as time, cost, quality and safety. The aim of this study is to identify and evaluate the main factors affecting the performance of construction projects in this country which suffers unstable political and economic circumstances that occurred after the year 2003 and still affecting the performance. Literature review about performance was carried out to identify the factors affecting the performance of construction projects. In addition, other local factors have been added as recommended by experts and according to the researcher's own experience in implementing construction projects. A literature review was carried out and 64 factors were identified, categorized into 7 groups. A survey was conducted to evaluate and rank these factors from clients, consultants, and contractor's perspectives. A total of 116 questionnaire sets were collected representing 36 clients, 38 consultants and 42 contractors in different parts of Iraq. It was concluded that projects were delayed and the actual cost of projects was much more than their values because of Iraq's political and security conditions. Overall project safety factors had been moderately implemented in construction organizations. It is recommended that construction organizations should have a clear mission and vision to formulate, implement and evaluate their performance. A structured methodology and technique should be identified to overcome the effect of local political and economic situations on the performance of construction projects.

Keywords: performance measurement, political factors, economic factors, construction projects.

INTRODUCTION

Performance measurement has become subject of considerable interest over the last three decades. Traditionally, businesses have measured the performance in financial terms, profit, turnover, etc. These financial aspects of performance have been the sole measure of a company's success. However, performance measurement that has been based around financial measures cannot cope with recent changes occurring in the industry, particularly due to the emergence of new technologies and increased intensity of competition [1].

The previous studies [2, 3, 4,] showed that the failure of any construction project is mainly related to problems and failure in performance. More ever, there are many reasons and factors which attribute to such this problem. In Iraq there are many projects failed in performance and measurement of performance systems are not effective or efficient to overcome such this problem.

Aim of the research

The research is, mainly, concentrating on the determination of the performance indicators in countries suffering of unstable political and economic difficulties. Iraq was taken as an example of these countries suffering of this instability since the year 2003.

LITERATURE REVIEW

Definitions of performance measurement

A performance measurement system can be defined as a set of information, which is at the heart of the performance management process and it is of critical importance to the effective and efficient functioning of the performance management system [5].Performance measurement was defined by [6] as a comparison between the desired and the actual performances. Performance measurement can also be defined as the process of quantifying the efficiency and effectiveness of an action [7]. Performance measurement has also been defined as the systematic assignment of numbers to entities [8]. Early definition by [9] suggests that the function of measurement is to develop a method for generating a class of information that will be useful in a wide variety of problems and situations.

Performance measurement concepts and models

In general, performance measurement systems refer to the measurement system implemented by a company [10]. These systems provide a mechanism to focus on wider business performance measures, which enable organizations to implement business improvement [11]. They help companies to decide on their objectives clearly, therefore optimize operations in the company since objectives and results are more closely aligned. However, three important outcomes are still critical for successful projects. These outcomes are completion of the project on time, the quality of the project, and the cost of completion, known as the golden triangle. Therefore, the projects owners need to ensure that these outcomes are achieved. Several researchers [12, 13, and 14] have identified that monitoring and controlling the aspects of quality, time and cost are the main objectives of any

construction project. However, they also identified several other factors that need to be considered in evaluating construction project success, such as resources and manpower. These can be used as factors in analyzing construction project performance.

[15] Identified a number of project success criteria used for measuring the success of mass house-building projects. These included: environmental-impact; customer satisfaction; and the traditional measures (cost, time and quality). Similarly, [16] identified time, cost, quality and functionality as the success criteria for design-build projects. Moreover, [17] argued that cost and schedule control are considered crucial measures of capital project success leading to client satisfaction. Setting the criteria for the success of any construction project must take into account the clients 'levels of satisfaction as a measurement of the project‘s performance. [18] Stated that contractors and clients measure project success from different perspectives, where contractors see reductions in cost and time as measures for project success, while clients focus on meeting stakeholder’s requirements. Nevertheless, in their study, [19] proposed a new methodology for measuring performance in the construction industry through a structured Performance Measurement System (PMS) with appropriate Management Information Systems (MIS). They added new measures such as identifying critical improvement areas, successfully addressing all stakeholders' requirements, and a change in culture. [20] Identified eight main criteria for measuring the success of projects including: Technical performance, efficiency of project execution, managerial and organizational implications, personal growth, project termination, technical innovativeness, manufacturability performance and business performance.

[21] linked project success measures with four success dimensions: Achieving design goals, which is associated with the preparation of the contract; tangible benefit to the end user, which depends on customer satisfaction regarding the final product; benefit to the developing organization, which depends on executing the project successfully; and benefit to the national infrastructure and the firm that wishes to improve their technological infrastructure during the development process. [22] Proposed a consolidated framework presenting different criteria for measuring project success. The criteria cover many aspects of project success such as: schedule, safety, participant satisfaction, user satisfaction and expectations, environmental performance, profitable value, quality and cost. Similarly, [23] and [24] reported that six measures are often used to measure project success: budget performance, schedule performance, client satisfaction, functionality, contractor satisfaction and project manager/team satisfaction. [25] Noted that once time and cost have been taken into consideration, then project success can be measured according to the percentage of profit, absence of claims and agreement with the owner without going to court.

Previous studies in performance measurement in construction

[26] Introduced a construction company’s approach to business performance measurement with a model constructed with two levels of outcome developed from the fundamental Behavior to Performance to Outcome (B-P-O) cycle in industrial/ organizational psychology. [27] Examined the use of information technology (IT) based management tools as a self-auditing PM system. As a result a dynamic performance measurement system was developed in line with the Integrated Performance Measurement System (IPMS) reference model [5]. [28] Also developed an Integrated Performance Measurement Framework (IPMF). [29]’s approach provides valuable guidelines for contractors who intend to implement such a measurement system in their companies.

As a result of Egan report [30], “Rethinking Construction”, The Construction Best Practice Program (CBPP) launched the KPI (Key Performance Indicators) for performance measurement [31]. [32] Proposed a Performance Measurement Process Conceptual Framework for Construction Firms (PMPCF). [33] Proposed a contractor selection system that incorporates the contractor’s performance prediction as one of the criteria for selection. [34]Introduced an alternative theory developed of what constitutes quality, client satisfaction, performance and their interrelationships in the context of the construction industry. [35] Stated that an organization's overall performance is influenced by the existing organization structure that is inherently complex with many interrelated components and modeled the dynamic performance of a construction organization. Introduced by [36], implementation of Six Sigma concept to construction provided a statistical indicator to measure the performance of processes or products against customer requirements.

Upon the principles of the balanced scorecard and business excellence models, [10] built a conceptual framework for measuring business performance in construction. [37] developed a model for integrating strategy formulation and performance measurement in organizations. [38] Introduced a framework that combines resource-based and institutional perspectives for identifying the industry and company-specific factors that affect construction company performance. [39] Examined the effect of information technology on company performance and found a positive association between them. [40] Developed a performance measurement system for construction companies by using the BSC perspective. [41] Developed a performance evaluation model using the financial, economic and industrial characteristics of companies. The applicability of the mentioned systems to construction was supported by [19] using empirical data.

[42] Stated that performance measurement systems have been one of the primary tools used by the manufacturing sector for business process re-engineering in order to monitor the outcomes and effectiveness of implementation. [43] Obtained an evaluation framework to measure the efficiency of Building Project Management (BPM) by using conventional economic analysis tools

such as time, cost and quality. [44] Stated that performance measurement systems are imminent in the construction firms. [45] Stated that effective and efficient management of contractors' organizational performance requires commitment to effective performance measurement in order to evaluate, control, and improve performance today and in the future.

[46] Claimed that performance measurement is a complex issue that normally incorporates at least three different disciplines: economics, management and accounting. Measurement of performance has garnered significant interest recently among both academics and practitioners. [6] Stated that performance measurement is needed not only to control current projects but also to update the historic database. Such updates enable better planning of future projects in terms of costs, schedules, labor allocation, etc. [47] stated that the measurement of project performance can no longer be restricted to the traditional criteria, which consist of time, cost and quality. There are other measurement criteria such as project management and products.

[48] Stated that measuring the performance of any construction project is a very complex process because modern construction projects are generally multidisciplinary in nature and they involve participation of designers, contractors, subcontractors, specialists, construction managers, and consultants. Also [44] proposed new framework for measuring construction logistics by using two-dimensions in order to improve productivity. The first dimension (use of measures) contains two kinds of measures. One of these kinds is called improvement measures which help construction industry to find out the problems with current practices. These measures are mainly used during development of projects. Another kind is called monitoring measures which are used for continuous monitoring of operations. The second dimension of the framework is the focus of measures. It clarifies at which organizational level measures can be used. There should be information available at the company and project level, as well as at the specific supplier or subcontractor level.

[45] proposed performance measurement system. The system comprises of construction business perspective including innovation and learning, processes, project, stakeholders, and financial perspective. The indicators developed from perspectives are categorized into three main groups which are drivers' indicators, process indicators and results indicators. The key to the success or failure of the measurement system are leadership commitment; employees' involvement and empowerment; and information coordination and management. [49] presented a method for measuring the environmental performance of construction activities committed by a contractor through calculating the contractor's environmental performance score (EPS). The level of EPS serves as a simple indicator for measuring and communicating the level of a contractor's environmental performance.

RESEARCH METHODOLOGY

This research was conducted in three main stages. The first includes a comprehensive literature review, which supports the survey methodology, identified the research problem, and identified aims and goals. The second stage included data collection, using questionnaire from parties involve in the construction process (Client, Contractor, and Consultant) working in the construction projects in Iraq. Taking into account that existing data on construction performance in this country is very limited, a great deal of the research was built according to the field investigation and local survey. In the third stage, analysis was made using data from the interviews, knowledge from literature review and the information about the performance of construction works in Iraq.

Questionnaire design

A questionnaire survey was designed aiming to get the opinion and understanding from the experienced respondents regarding to the construction performance problem in Iraq. The questionnaire consists of two main sections. The first included the characteristics and backgrounds of the participants and companies who contributed to the survey. Such questions were: Type of organization, typical of projects of organization, company size in terms of the number of employees, job title of the respondents, years of experience of the respondents, number of projects executed by the respondents in the last five years and value of executed projects in the last five years.

The second section included the factors that may have considerable impact on performance in the construction industry. The total number of factors considered is 64 grouped into seven categories. These are:

- Time related factors - 13factors.
- Cost related factors - 20 factors
- Quality related factors - 6 factors
- Productivity factors - 7 factors
- Client satisfaction factors - 5 factors
- Community related factors - 5 factors
- Health, safety and environment factors - 8 factors

Data analysis

The Relative Importance Index method (RII) is used here to determine owners, consultants and contractors perceptions of the relative importance of the key performance indicators in Iraqi construction projects. The Relative Importance Index (RII) is computed as in equation 1[50, 48, and 51]:

$$RII = \frac{\sum W}{A \times N} \quad \ldots\ldots\ldots 1$$

Where: W is the weight given to each factor by the respondents and ranges from 1 to 5, A = the highest weight = 5, N = the total number of respondents.

The survey results

Characteristics of the respondent's

The majority (75%) of the respondents have engineering experience of more than 15 years in implementing civil engineering and public buildings projects in Iraq. The clients included in this survey were different ministries and municipalities while the contractors were selected from the top three classes only.

Factors affecting the performance of construction projects

Time related factors

The average relative importance index (RII) for this group is 0.776. Table-1 shows the (RII) and rank of the significant factors affecting the performance in the Iraqi construction projects according to time factors for clients, consultants, and contractors and the overall results. It can be noticed that the most important factors affecting the projects time in Iraq are security measures and unofficial holidays with overall RII of 0.926 and 0.872 respectively. The other significant factors are: Bureaucracy within the client's departments, availability of resources as planned, delay in payments from owner to contractor delay due to materials shortage, and due to local conditions.

Table-1. Performance significant factors - Time.

Average RII for the time group based on the overall results = 0.776								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Security measures	0.936	1	0.908	1	0.932	1	0.926	1
Unofficial holidays	0.878	2	0.850	2	0.888	2	0.872	2
Bureaucracy within the client's departments	0.863	3	0.843	4	0.861	4	0.849	3
Availability of resources as planned through project duration	0.856	4	0.845	3	0.818	5	0.841	4
Average delay in payment from owner to contractor	0.801	5	0.812	5	0.846	3	0.828	5
Average delay because of materials shortage	0.801	6	0.762	7	0.796	6	0.787	6
Local conditions	0.792	7	0.752	9	0.768	7	0.771	7

Cost related factors

The average relative importance index for this group is 0.774. Table-2 presents the (RII) and rank of the significant factors affecting the performance in Iraq according to cost related factors for the main parties and the overall results. It can be noticed that the most crucial factors are Cost of security, Cost due corruption, and Cost due to un-official holidays with RII'sof 0.938, 0.888 and 0.865 respectively. The other significant factors are: Cost of variation orders, profit rate of project, project overtime cost, waste rate of materials, material and equipment cost, escalation of material prices, and project labor cost.

Table-2. Performance significant factors - Cost.

Average RII for the cost related group based on the overall results = 0.774								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Cost of security	0.942	1	0.904	1	0.966	1	0.938	1
Cost due corruption	0.894	2	0.845	2	0.922	2	0.888	2
Cost due to un-official holidays	0.856	3	0.842	3	0.894	3	0.865	3
Cost of variation orders	0.812	4	0.804	8	0.864	4	0.828	4
Profit rate of project	0.801	6	0.832	4	0.846	5	0.827	5
Project overtime cost	0.800	7	0.812	6	0.840	8	0.818	6
Waste rate of materials	0.795	8	0.814	5	0.84	9	0.817	7
Material and equipment cost	0.792	10	0.803	9	0.846	6	0.815	8
Escalation of material prices	0.792	9	0.806	7	0.844	7	0.814	9
Project labor cost	0.802	5	0.786	10	0.804	10	0.797	10

Quality related factors

The average RII for the group is 0.737. Table-3 shows that there are three significant factors related to quality affecting the performance. These are: Conformance to specification, quality of equipment and raw materials in project, and availability of personals with high experience and qualification.

Table-3. Performance significant factors - Quality.

Average RII for the group based on the overall results = 0.737								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Conformance to specification	0.762	3	0.802	1	0.716	4	0.758	**1**
Quality of equipment and raw materials in project	0.802	1	0.702	6	0.756	2	0.752	**2**
Availability of personals with high experience and qualification	0.747	3	0.726	4	0.744	3	0.739	**3**

Productivity related factors

Table-4 shows the most significant and ranking of the productivity related factors. This significance is based on the overall results. These factors are: Security measures, un-official holidays, absenteeism rate through project.

Table-4. Performance significant factors - Productivity related factors.

Average RII for the group based on the overall results = 0.738								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Security measures	0.856	1	0.820	1	0.880	1	0.852	1
Un-official holidays	0.802	2	0.786	2	0.856	2	0.816	2
Absenteeism rate through project	0.764	3	0.756	3	0.804	3	0.776	3

Client satisfaction related factors

The survey revealed that there only two factors related to client which showed significant effect. These are: Information coordination between owner and project parties, and speed and reliability of service to owner. Table-5 showed the results related to the three parties.

Table-5. Performance significant factors - Client satisfaction related factors.

Average RII for the group based on the overall results = 0.693								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Information coordination between owner and project parties	0.742	2	0.785	2	0.778	1	0.769	1
Speed and reliability of service to owner	0.762	1	0.753	1	0.744	2	0.753	2

Community related factors

The average RII of the group is 0.65. There are only two factors with significant effect. These are: Problems with adjacent community, and neighbors and site conditions problems.

Table-6. Performance significant factors - Community related factors.

Average RII for the group based on the overall results = 0.650								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Problems with adjacent community	0.776	1	0.769	1	0.768	1	0.771	1
Neighbors and site conditions problems	0.742	2	0.756	2	0.767	2	0.756	2

Health, safety and environment related factors

The average RII of this group is 0.64. Three factors showed they are significant. The first is application of health and safety factors in organization with RII of 0.781. The other two are: Reportable accidents rate in project, and wastes around the site.

The most significant Performance factors - all the groups

Table-8 shows summary of ranking of the most significant factors in Iraq based on the answers of the three parties and the overall results.

Table-7. Performance significant factors - Health, safety and environment related factors.

Average RII for the group based on the overall results = 0.640								
Factor	**Client**		**Consultant**		**Contractor**		**Overall**	
	RII	**Rank**	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Application of health and safety factors in organization	0.785	1	0.795	1	0.764	1	0.781	1
Reportable accidents rate in project	0.764	2	0.758	2	0.762	2	0.761	2
Wastes around the site	0.675	1	0.648	1	0.676	1	0.667	1

Table-8. Ranking of the most significant factors - Iraq.

Factor	Client	Consult.	Contr.	Overall	
	RII	RII	RII	RII	Rank
Cost of security	0.942	0.904	0.966	0.938	1
Security measures related to time	0.936	0.908	0.932	0.926	2
Cost due corruption	0.894	0.845	0.922	0.888	3
Unofficial holidays - time	0.878	0.850	0.888	0.872	4
Cost due to un-official holidays	0.856	0.842	0.894	0.865	5
Security measures - productivity	0.856	0.820	0.880	0.852	6
Bureaucracy within the client's departments - time	0.863	0.843	0.861	0.849	7
Availability of resources as planned through project duration	0.856	0.845	0.818	0.841	8
Average delay in payment from owner to contractor	0.801	0.812	0.846	0.828	9
Cost of variation orders	0.812	0.804	0.864	0.828	10
Profit rate of project	0.801	0.832	0.846	0.827	11
Project overtime cost	0.800	0.812	0.840	0.818	12
Waste rate of materials	0.795	0.814	0.84	0.817	13
Un-official holidays - cost	0.802	0.786	0.856	0.816	14
Material and equipment cost	0.792	0.803	0.846	0.815	15
Escalation of material prices	0.792	0.806	0.844	0.815	16
Project labor cost	0.802	0.786	0.804	0.797	17
Delay due to materials shortage	0.801	0.762	0.796	0.787	18
Application of health and safety factors in organization	0.785	0.795	0.764	0.781	19
Absenteeism rate through project	0.764	0.756	0.804	0.776	20
Local conditions	0.792	0.752	0.768	0.771	21
Problems with adjacent community	0.776	0.769	0.768	0.771	22
Differentiation of coins prices	0.766	0.758	0.786	0.770	23
Cost control system	0.768	0.798	0.746	0.769	24
Information coordination between owner and project parties	0.742	0.785	0.778	0.769	25
Reportable accidents rate in project	0.764	0.758	0.762	0.761	26
Conformance to specification	0.762	0.802	0.716	0.758	27
Cost of rework	0.745	0.756	0.766	0.756	28
Neighbors and site conditions problems	0.742	0.756	0.767	0.756	29
Speed and reliability of service to owner	0.762	0.753	0.744	0.753	30
Time needed to implement variation orders	0.711	0.784	0.766	0.752	31
Quality of equipment and raw materials in project	0.802	0.702	0.756	0.752	32
Overhead percentage of project	0.752	0.745	0.754	0.750	33
Availability of personals with high experience and qualification	0.747	0.726	0.744	0.739	34
Planned time for project construction	0.763	0.754	0.692	0.738	35
Project design cost	0.744	0.726	0.742	0.737	36

The reliability of factors analysis

Cronboch's alpha (Cα) test was utilized to examine the reliability of the risk management factors. Table-9 presents the cronbach's alpha for the four groups and overall factors. The criteria suggested by [52] for the interpretation of the consequences of the results of the analysis was used as: Cα> 0.8, 'Excellent'; 0.8> Cα> 0.7 'Good'; 0.7> Cα>0.5 'Satisfactory' and Cα <0.5 ' Poor'.

Table-9. Reliability analysis.

Factors	Cronbach alpha	Result
Time related factors	0.755	Good
Cost related factors	0.536	Satisfactory
Quality related factors	0.482	Poor
Productivity factors	0.644	Satisfactory
Client satisfaction factors	0.656	Satisfactory
Community related factors	0.589	Satisfactory
Health, safety and environment factors	0.725	Good
All factors	0.648	Satisfactory

DISCUSSIONS

The following is a discussion of factors resulted due to the conflicts after 2003:

Security: It can be noticed that the most important factors affecting the projects time in Iraq are security measures and unofficial holidays. The first and foremost problem in the reconstruction of Iraqi projects is security. The lack of security in post-war Iraq created an enormous demand for security services. Attacks, murders, bombing and armed vandalism are routine threats to reconstruction contracts. Since reconstruction began in 2003 and as of July 2009 alerts 1395 workers on U.S. funded projects have died according to the U.S. Departments of Labor and State [53]. In addition, there have been thousands of insurance claims by construction workers for injuries sustained in attacks. The figures are probably misreported, especially among Iraq contractors. Intimation of workers has delayed projects and reduced the availability of no-Iraqi expert technicians. It is estimated that 25% of reconstruction funds have been used to provide security to construction workers and job sites. Attacks and vandalism have also affected projects including sabotage of oil pipelines and high voltage electricity towers [54].

Unofficial holidays: Iraq recognizes about 150 vacation days, which is equivalent to one-third of the year, According to a law that was passed by the Iraq Parliament in April 2013. According to this law, some cities with religious affiliation are allowed to determine their own holidays, and thus the number of vacation days. In addition to the large number of holidays in Iraq, it off can sometimes extend for longer periods that specified by the law [55]. The large number of days per year projects are stopped has a negative effect on the productivity of labor completing the project at the right time and then lower performance of the project. The media has been reporting that Iraq ranks first in the world in terms of highest number of vacation days per year. Despite the adverse effect of frequent holidays on the overall activity of the country, the Iraqi government does not seem interested in finding serious solution to this problem. It appears that the issue of holidays is part of a system that characterizes the political process is Iraq, with each religion, sect, minority and ethnicity advocating to have their religious celebrations recognized as official holidays. Although these holidays disrupt work in the state departments and services and construction sectors, there is no agreement within the Iraqi parliament to address the problem and find adequate solutions.

In the industrial world, a long stoppage send companies bankrupt and cause major economic disruption, including unemployment for thousands. In developed world, like United Kingdom, the amount of annual leave to which workers are entitled is seen as something of a measure of social welfare. And this idea did not come from out of nowhere: it came about after a long struggle by the labor movement that sought to allow employees time for rest and recuperation, for their physical and mental wellbeing. One can compare the number of public holidays in the industrialized world. For instance, in Europe most nations have between 9 and 15 official public holidays. So it seems again, Iraq is doing the opposite of the rest of the world. The negative economic impact of all these holidays is not limited to direct costs and losses that result from the disruption of business and government. There is also a huge burden, borne by state authorities, of organizing events around the holidays as well as the security that's necessary to hold them.

Corruption: Most, if not all of Iraq's construction projects, which are sold at a price that guarantees their implementation with the minimum level and at the lowest cost [56]. Official are restoring to their relatives and friends by registering companies in their names for form's sake when these companies do not have skilled techniques or mechanism. With the help of officials, the companies sign a contract to build a school, for example, and they carry out the projects either by setting it to another contractor by recruiting workers and

developing mechanism. This ultimately leads to failed projects. Usually, the money allocated for projects is sufficient in most cases. But passing the money through intermediaries and chain contractors reduces effective spending on the project to no more than 50% of the original amount [57]. Corruption in the different types of projects is widely linked to political corruption, and political officials are often directly involved in it. Usually, the contracting process goes through several stages of coordination and planning among influential official and contracting as well as securing the money for it. The amount is then doubled to make room for bribery, embezzlement and manipulation. In additional the project is implemented with minimal specifications to achieve higher profits. Contractors are associated with parties and politicians, and they receive huge sums while the project remained inactive or were badly implemented. Parties are covering up the corruption of each other, which leads to a loss of money into the pockets of the corrupt, because of the lack of real tenders or clear agreement. This, in turn, doubles the real cost of projects. Corrupt contracting practices in Iraq are only part of a broader culture of corruption that no one has been able to change, despite government efforts enlisting international assistance to end to it. The difficulty appears to lie in the persistence of political parties, officials contracting reaping the benefits.

CONCLUSIONS

A structured questionnaire survey approach was considered to study the impact of various attributes and factors affecting construction projects performance. The questionnaire assists to study the attitude of owners, consultants and contractors towards key performance indicators in the construction industry. Sixty-four factors were considered in this study and were listed under eight groups based on literature review. These groups give a comprehensive summary of the main key performance indicators. The indicators were summarized and collected according to previous studies and others are added as recommended by local experts. The main groups considered in this thesis are time, quality, productivity, client satisfaction, regular and community satisfaction, health and safety, and environment.

The target groups in this research are clients, consultants and contractors in Iraq. Number of sets collected was from 112 respondents representing 36 clients, 38 consultants and 42 contractors. The results were analyzed, discussed to obtain the most significant performance indicators. The relative importance index method (RII) was used here to determine clients, consultants and contractors perceptions of the relative importance of the key performance indicators.

The survey the top ten significant factors key performance indicators are: Cost of security, security measures related to time, cost due corruption, unofficial holidays - time, cost due to un-official holidays, security measures - productivity, bureaucracy within the client's departments - time, availability of resources as planned through project duration, average delay in payment from owner to contractor, and cost of variation orders.

RECOMMENDATIONS

A more effective approach should be considered by the Iraqi government to reduce opportunities for corruption. This should be done by requiring all political parties, politicians and officials to set procedures that are to be followed by anti-corruption bodies.

There are several intertwined security problems that require being resolved, and this goes beyond the technical frameworks and reach the political decision-making.

Although Iraq is in need of an inclusive reconstruction process, the many holidays especially the religious ones stand in the way of the country's construction and development. This situation thus requires serious consideration that bears in mind the best interests of the country, not those of conflicting religious factions.

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