Factors Affecting Project Performance in Kurdistan Region of Iraq

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Abstract— *Construction industry consists of many parts which result in a complexity in its nature. In Kurdistan Region (KR) of Iraq, construction projects have a lot of drawbacks in measuring their time of the product, cost, and safety of the work. The research below is to recognize and estimate the issues impacting the product performance in KR. The results that we got from the previous studies participated in preparing this research. A study is investigated for 63 factors of consultants and constructors viewpoints. The total questionnaire was 120. 83 answers are (69%) resulted from the participants: 16 (64%) to owners, 22 (63%) to consultants and 45 (75%) to contractors. Significant issues decided were: The delay in execution of projects due to shortage and closure of materials; the labors' availability in their work according to project duration; managing of projects and providing the skills of leadership; Alteration in prices of materials; highly qualified and expert persons need; Using of good materials and equipment.*

Constructing organizations should reach their strong purpose in their production. Perfect methods and approaches must be recognized for controlling the impact of political and economic conditions. Additionally, a training program should be provided to progress the innovators in the construction industry construction projects. Organizations in the KR should assess the sharing of the market earlier than implementing projects. The reason is going to the difficult economic situation in the KR. This will help the administrations to accomplish works positively.

Keywords— ***Construction firms, construction management, factors affect the performance, project performance, Kurdistan region construction projects.***

I. INTRODUCTION

Working in construction has a chief part in the enlargement and attainment the targets of public. It considers is one of the major businesses and gives to about 10% of (GNP) in developed nations. The economic condition has a noticeable effect on construction industry [1]. Project performance is affected by many indicators such as time, cost, and quality. The Kurdistan Region (KR) construction project performance affects by many problems and complex subjects as in [2]. There are numerous causes like terminations, alteration of sketches and alteration of the plans. Moreover, we have extra various causes impacting KR projects like an underprivileged management and leadership.

In this study, the features moving the performance in the KR construction manufacturing have been planned. However, the investigation aimed to categorize the subjects and characteristics which touch the performance of construction projects.

II. STATEMENT OF THE PROBLEM

The research study in [3] has shown an unsuccessfulness in plans is mostly linked to the dissatisfaction in the product work of the company. Furthermore, various explanations and features which point to such this problem. In the KR, some works got effectiveness in performance. Additionally, the system used for performance may not be able to solve this point. Construction projects performance problem looks via different guidelines. At the end of 2015, a lot of plans ended bad projects. There were many causes: problems by customers, infrastructures ending, modification of the projects plan, extra jobs. There are other pointers of performance in the KR, the organization behavior among members, checking, and feedback and leadership expertise. Though, many significant subjects connected in a fruitless performance in the KR such economic factors and political.

III. OBJECTIVES

A study is prepared for examining impacts touching the constructing performance in the KR. The main target of an investigation can be seen in the following points:

1. Recognizing the issues impacting the performance of construction projects
2. Defining owner's opinions together with consultants and contractors to identify relation significance in the KR construction projects

IV. RESEARCH METHODOLOGY

This study presented the chief factors influencing the construction projects performance in the KR. From a

literature review, various methods and approaches had been investigated to attain the necessary goals. There are many preceding types of research concentrated on issues touching the performance in projects. Some of the researches concentrated on construction projects performance measurement. Others, concentrated on various features connected to performance such as the development of information technology.

A variation in the targeted topics as presented in the past, requested variance methods. The chief methods are achieved during researches such as surveying questionnaire and doing interviews.

V.   RELATED WORKS

Researchers of [4] investigated 42 public sector cover some projects in Nigeria to assess the performance especially related to duration and cost. Key Performance Indicators (KPIs) are established for a real purpose using in industry project work. Brown and Adams settled a novel method for measuring the impact of managing a project building on the quality, timing and cost in performance [5]. Authors of [6] examined time and cost relations in community subdivisions in Malaysia by using the analysis regression to clarify cost and timing performance relation. Iyer and Jha in [7] investigated the issues influencing the cost performance by making an allowance for a questionnaire study. Academics in [8] observed the relationship between time and cost by means of 161 construction plans projects which finished in the different Australian States. Ugwu and Haupt in [9] investigated a KPI by in a country like South Africa. A study was directed by linking of the practical interviews with companies, specialists and obtainable administration rules of ecological influence valuations and maintainable. For multi-criteria decision, the analytical hierarchical process (AHP) revised a comprehensive model in order to integrate all necessary possession built on timing together with cost in performance [10]. The second measurement of the agenda is related to the concentrating on the measurement. It explains at which organizational level the measurement may use.

The research [11] depended on the literature review and suggested a performance measurement system as a model. Additionally, the system contains constructing work viewpoint counting the innovation and learning, processes. Moreover, it has been projected a survey containing pointers touching the performance of projects. Authors of [12] got an outlining software to display and monitor the project performance. Furthermore, a questionnaire is recognized to include the project performance factors in the Project Performance Monitoring System (PPMS). The observing procedure is computerized by the use of WWW and database or by

suggesting the technologies used in [13] and [14]. Also, Data collection and distribution are equally distributed. After that it is changed to require the Project Performance International (PPI) magnitude using algorithms. Investigators of [2] and [15] talked about a performance of construction industry project as a factor which affects the competitiveness level in the KR construction industry in order to have a product at the same level of the high competitive country together with an innovative system for managing the construction projects.

VI.   RESEARCH METHODOLOGY

The research debates the main issues touching the performance by including the construction organizations in the KR. The simple method which is deliberated to gain the objective of this research by categorizing the issues touching constructing project performance. The performance subject had been studied in many types of research and papers for understanding main local issues impacting the construction project performance in the KR. Additionally, many other factors added automatically as it is suggested by the limited specialists such as project. Also, 63 factors those are affecting the constructing performance are nominated. The features are gathered and divided into 10 collections. The groups can explain an understandable text of the chief key performance pointers. Finally, the features had been mentioned are grouped due to studies and also provided as suggested by local specialists.

5.1. DATA MEASUREMENT

To have the ability to choose the suitable approach for analyzing, we should have a better idea about the level of measurement. Every measurement type has the special method for it not for others. In our research, a Likert scale is normally used to level the data according to their level of importance which are usually integer numbers. The Likert (1, 2, 3, 4, and 5) are used to indicate the ascending and descending in an interval between scales not indicating absolute quantities, where scale 5 goes to the very high important and 1 indicates the very low important.

5.2. GROUP ONE: COST FACTORS:

In the first position, we have increase in the escalation of material prices, those are ranked be owners and contractors. Nevertheless, this factor comes in the second position by the consultants. From the results, it is clear that escalation of material prices is less significant in consultant answers than owners and contractors. The reason is because of the effect of the factor on the liquidity of owners and the contractor's profit as we can see in the **Table.1**.

Table.1: RII and rank of cost factors

Factors	Owner		Consultant		Contractor	
(1) Cost factors	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Escalation of material prices	0.85	1	0.823	2	0.9	1
Differentiation of coin prices	0.8	4	0.82	3	0.86	2
Cash flow of project	0.822	2	0.79	4	0.85	3
Material and equipment cost	0.822	2	0.76	5	0.811	5
Liquidity of organization	0.727	5	0.85	1	0.842	4

In the fourth position by the owner, we have differentiation of coins prices. Consultants leveled it in third class and the contractors gave the second level to it. It is normal to see the up and down in the prices of a coin is significant with contractors work due to its effect on cost and profit of contractors.

A second position project cash flow is leveled by owners. By the consultants' answers, it comes in the fourth level. According to contractors, answers got the third level. For owners together with contractors, cash flow is more significant than for consultants. Since it measures the performance cost in every level of constructing work. Some authors commented in using of cash flow which is important scale to measure the construction projects' cost performance. The material and cost equipment comes in the second position by the owners, but it leveled in the fifth level by the consultants and the contractors. Additionally, it illustrated that the subject is more significant with owners more than others.

The cost of material and equipment is considered as project mechanisms that touch the owners' liquidness together with project financial plan. They commented that cost of material and cost of equipment infrequently impact the performance cost in research of Indians' and South Africans' building projects. Liquidity of organization is leveled in the sixth position by the owners. Also, it leveled in the first level by the consultants and by the contractor's answers in the fourth position. This feature is measured as a very significant one among the cost performance. It mainly depends on liquidness of association [9]. The result is agreed with [11] as liquidity is significant in assessing of cost and budget performance. The reason comes due to various economic and political situation.

5.3. GROUP TWO: TIME FACTORS:

The Average delay because of closures and materials shortage is considered a very significant factor. Also ranked as a first position among all features for contractors together with consultant and owner. Building projects in the KR are suffering many drawbacks in

constructing due to closures and materials shortage. This considered a problem for evaluating the time performance of projects as we can see in the **Table.2**.

Table.2: RII and rank of time factors

Factors	Owner		Consultant		Contractor	
(2) Time factors	**RII**	**Rank**	**RII**	**Rank**	**RII**	**Rank**
Site preparation time	0.679	7	0.661	9	0.591	9
Planned time for project construction	0.75	4	0.759	5	0.761	5
Percentage of orders delivered late	0.692	6	0.763	4	0.77	4
Time needed to implement variation orders	0.699	5	0.7	7	0.69	7
Time needed to rectify defects	0.654	8	0.67	8	0.635	8
Average delay in claim approval	0.59	9	0.725	6	0.761	5
Average delay in payment from owner to contractor	0.822	3	0.771	3	0.832	3
Availability of resources as planned through project duration	0.869	2	0.855	2	0.9	2
Average delay because of closures and materials shortage	0.889	1	0.891	1	0.94	1

Availability of resources as planned through project duration comes in the second position in owners answers. The consultants and contractors graded the factor in the second level. Moreover, if incomes are unobtainable as calculated for the duration of the project, the project may have many problems in the time performance. Also, the average delay in the payment is leveled in the third level by contractor, owner, and consultants.

Additionally, the feature gets the similar line for both contractor and consultant considered more significant for them. Since it can be connected to prescribed relations among them. Also, the contractors unable to develop the level of the project if it is not ordering by consultants.

5.4. GROUP THREE: QUALITY FACTORS:

In the fourth position, the participation of managerial levels with decision-making are decided by the owners, consultants and contractors answers. Furthermore, the feature catches a similar degree for in all parts due to an involvement of administrative levels with decision making results in the best implementation and measuring the work performance as we can see in the **Table.3**.

Table.3: RII and rank of quality factors

Factors	Owner		Consultant		Contractor	
(3) Quality factors	RII	Rank	RII	Rank	RII	Rank
Participation of managerial levels with decision-making	0.81	4	0.781	4	0.79	4
Availability of personals with high experience and qualification	0.86	2	0.842	1	0.861	1
Conformance to specification materials in project	0.88	1	0.811	3	0.819	3
Quality of equipment and raw materials in project	0.831	3	0.839	2	0.859	2

Having high and expert people comes in the first level by consultants and contractors answers and are classified by in the second level by owners. Though, a feature is in a high order of significance to high and expert people and help them in implementing a project in a profession and success way. Conformance to specification materials in project, the factor graded in the first level by owners and classified in the third level for others.

The raw materials quality together with equipment quality is classified by the consultants and contractors answers in the second level, but in the third level by owners. Also, a feature is very significant for consultant and contractor more than for owner.

VII. CONCLUSION

By considering the construction sector very essential department in the world, since it helps in achieving and getting the goals of society. There are many factors affecting its performance. The reason about this study is to go back to discuss the main features affect the Kurdistan Region (KR) constructing Industry. A questionnaire style of study is established in order to recognize the necessary tools affecting the KR industry sector. In this research, we studied the attitude of contractors, consultants, owners towards the factors affecting the performance. A pilot study of the questionnaire consisted of 30 questionnaires. From the literature review, we find sixty-three factors by dividing them into 10 groups.

The research study has investigated many factors that have been discussed and examined such as time, quality, productivity, client satisfaction, regular and community satisfaction, people, health and safety, innovation and learning, and environment. Factors are divided into owners, contractors, and consultants. The total number of questionnaires were 120. They are distributed as 25 to owners, 35 to consultants and 60 to contractors. The answers that we received were 83 questionnaires out of 120, which gave us the rate of 73.33%. The good experiences are helped to discover the attitude of the virtual importance of project performance. At the end, the

relative importance index method (RII) is calculated in order to determine owners, consultants and contractors attitudes in the Kurdistan Region construction projects.

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