Evaluation of Overhead Costs in Iraqi Construction Industry

Sawsan M. Rashed
Assistant Professor
College of Engineering
University of Baghdad
Email: Sawsan_2@yahoo.com
Salman A. M. Al-Dhaheri
M.SC student in Construction projects Management
College of Engineering
University of Baghdad
Email:engsalman07@yahoo.com

Abstract:-

After 2003, construction industry became one of the more importance sectors in Iraq, the competitive increased between the construction companies which more it established after that time, Some companies have been able to grow and gain good experience, others have failed in implement the projects which awarded to them, which reflected negatively on the implementation those projects, this caused many suspensions and disputes. The main goal that must Seek to it all parties is implement the projects in the required specifications, quality, cost and period. The wise administration, which has become a necessity for the Iraqi construction industry and the fair and just items that must be included in the contract, contribute mainly to achieving this goal and also contribute to reducing disputes between the parties. This research aims mainly to assess the costs of overheads in the Iraqi construction industry and explore the factor that affect these costs and their items to increase the awareness of contractors about importance of accurate estimation for these costs in their projects to avoid the financial damages that may be incurred as a result of inaccurate estimation which reflect negatively on implementation the project .

Keywords: Overhead Costs, Iraq, Construction Industry

1. Introduction

Construction industry is one of the main industries in the Iraqi economy. after 2003 the large expansion of this field has led to Increase the number of local contractors and construction companies. it is important to evaluate elements of costs of this industry to support the companies and contractors ability in pricing the tender accurately that leading to development this sector correctly.

Competition in the construction market becomes very large when the selection on basis of the bids prices essentially, winning the tender requires an accurate estimate of the cost of the tender. The most important of these costs are the cost of overhead **[11][4][9]**.The high estimation of overhead costs cause lose the tender, in the other hand, the high reducing in overhead costs cause financial lose, hence became it is difficult to ensure

complete the project in the required time, costs and quality.

2. Construction overhead costs

Overhead costs are defined with different definition **[8]**. From this definition: it is the costs that are not consider a part of actual construction costs, but is incurred necessarily by the contractor to supporting the construction project **[5].** Overhead Costs consist from two divisions: home office overhead costs and project overhead costs **[8].**

2.1. Project Overhead Costs

Project overheads are defined as expenses costs that use to management the specific project ,it defined too as indirect costs which allocate to a specific project, but not allocate to a trade or work item **[6][10]**.

2.2. Home Office Overhead Costs (HOOH)

Home Office Overheads are defined as the incurred expenses by the home office which cannot be connected directly with a specific project such as rental of the home office building, clerical, or utilities **[7].**

3. Research Methodology

Stage1: Data collection

The researcher reviewed many of declared paper, thesis and books to collect the factors affecting on overhead costs and their items, the collected factors from this theoretical studies reached 37 factor and 3 factors Suitable to the condition in Iraq were added, the total factors became 40, After that the factors distributed on groups, each group shares with particular Features put under a key factor, the main factors which conducted are 8, While the items of overhead costs reached 26 item for home office overhead and 31 item for POH.4 HOOH items and 6 POH items Suitable to the condition in Iraq were added, the total items of HOOH and POH became 30 and 37 sequentially, After that both items of HOOH and POH distributed on groups Separately, each group shares with particular Features put under a key item , the main items which conducted are 6 for HOOH and 8 for POH.

Stage2: Preliminary test for the questionnaire data

After review the literature which regards with overhead or indirect costs in construction industry and preparation the Preliminary questionnaire form, the researcher distributed it to 6 engineers who have experience more than 10 years in construction projects. The experience of the engineers was in the site working management of projects, and Engineering Consulting Offices in the private and Public Sector Company. The opinion and notes of the Experts help the researcher to Delete and add appropriate notes; formulate the questions and the questionnaire form.

Stage3: Conducting combined (closed–open) Questionnaire

The combined questionnaire is one of the methods which used in the researches to collect the information about closed questions which Require specific answers and Selections and open questions which Require free answers to know the opinion of the respondent about many subjects like (percentage of overheads in kinds of the construction projects, adding any other affecting factors and items of overhead costs don't listed in questionnaire which the respondent see it important). The following steps used in conduct the combined questionnaire:

1. designing the general frame of questionnaire and specify lines of questions.
2. Distributing the questionnaire among the study sample to obtain their answers about the questions.
3. Collecting the questionnaires after perform answers and review them and return questionnaire which contain missing in closed questions to Complete them and Receipt them again .
4. Perform the mathematical and statistical analysis by using (SPSS V. 19) program.

4. Selection of the Research Sample

The researcher distributed (77) questionnaires for the private and public sector company in many of Iraqi Provinces such as Baghdad, Salahaddin, Holy Karbala, and Maysan. The number of questionnaires which received is (70), one of them was neglected because it is contained answers less than 20%, the total Valid was (69).

5. Calculating the Arithmetic Mean

Analysis the data which obtained from the five-scale likert and calculate the arithmetic mean require identifying method of evaluation the Answers, the researcher adopted the class interval or weighted mean for each answer as suggested by reference **[3],** this method is illustrated in **Table .1.**

Table .1 Weight value and class interval of descriptive frequencies. [3][2]

Level	Class Interval (Weight Mean)	Weight Value
Very low	1.00 - less than 1.80	1
Low	1.80 –less than 2.60	2
Medium	2.60 - less than 3.40	3
High	3.40 - less than 4.20	4
Very high	4.20 - 5.00	5

The equation (1) used to calculate arithmetic mean (AM). **[1]**

$$A.M. = \frac{\sum (\text{Weight Value for particular} * \text{number of frequencies})}{\text{Total number of the answers}} \quad \ldots\ldots\ldots\ldots (1)$$

6. Results of Questionnaire Data Analysis and Discussion

6.1. General data

The result of part one which is general data includes two groups about Information of the Respondent and his

company with eight questions illustrated in the **Tables. 2-3-4-5-6-7-8** and **Fig .1.**

Table .2 The result of Respondents position

Table.2 shows that the high percentage (45%) were from Office engineers followed with others (41%) this include{ (59%) department or section managers in Planning, projects, Finance and (41%) projects managers or site engineers } and equal percentage for Projects department managers and Specialized into pricing of tenders, this percentages reflect that the selected sample represent Who have the ability to make managerial decisions concerning percentage of overhead costs and have a close relationship in dealing with overhead costs.

Table.3 The result of Education Attainment of Respondents

N	Education	F	%
1	Accountant	3	4
2	Business Administration	0	0
3	Engineering	66	96
4	Others	0	0

Table.3 shows that the Education Attainment for very high percentage (96%) of study sample are engineering this include{ (67%) civil and (14%) mechanic , equal percentage (6%) for (structure and architectural) and equal percentage (2%) for (Control and systems, Chemical, projects management) and (1%) bridge designs } while The Education Attainment for the rest are Accountant with percentage (4%), this reflect that the selected sample in the different positions are engineers which mean have continuous and direct dealing with overhead costs.

N	position	F	%
1	Chairman of Directors Board	0	0
2	Projects department manager	5	7
3	Office engineer	31	45
4	Specialized into pricing of tenders	5	7
5	others	28	41

Table.4 The result of Scientific Qualification of Respondents

N	Qualification	F	%
1	Diploma	1	1
2	BSc	50	73
3	MSc	13	19
4	PhD	0	0
5	Others	5	7

Table.4 shows that the Scientific Qualification were (73%) BSc and (19%) MSc, This means that the sample of the study has good academic qualifications that enable them to understand the questions of the questionnaire, which enhances confidence in the information collected by the questionnaire.

Table .5 The result of number of Years of Respondents Practical Experience

N	number of Years of Respondents Experience	F	%
1	Less than 5 years	7	10
2	6-10 years	6	9
3	11-15 years	11	16
4	16-20 years	13	19
5	more than 20 years	32	49

Table.5 shows that the Respondents Practical Experience distributed among (49%) more than 20 years, (19%)between 16-20 years, (16%) between 11-15 years, (9%) between 6-10 years and (10%) Less than 5 years, There is sufficient experience for the study sample in structural projects and dealing with the overhead costs, and have the ability to deal with the questionnaire and packaged objectively.

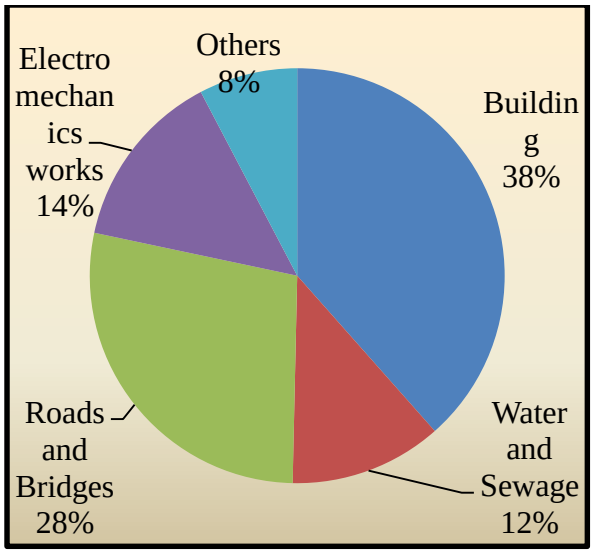

Fig. 1 kinds of projects which are doing by these companies

Figure.1 shows that 38% from the respondents companies are working in projects of buildings, while 28% is roads and Bridges, 12% is water and sewage, 14% is electro mechanics works, and 8% are working in other types.

Table .6The result of average number of projects which implemented through these companies during one year

N	Average number of projects which implemented through these companies during one year	F	%
1	2 or less	17	25
2	From 3 to 7 projects	33	48
3	From 8 to 12 projects	8	11
4	More than 12 projects	11	16

Table.6 shows that the result above shows that 25% of the companies sample have average number of projects which implemented through one year are " 2 projects or less " , while 48% are from 3 to 7 projects , 11% are " from 8 to 12 projects " and 16% are more than 12 projects The majority percentage is located between 3 to 7 projects and the gradation in the rest percentage reflect the variety in the financial and competitive capabilities of Iraqi contracting companies which targeted in the study.

Table .7 The result of Average yearly value for the projects implemented by these companies over the past five years

N	the average yearly value for the projects implemented by these companies over the past five years	F	%
1	less than 1 million $	2	3
2	1.1- 3 million $	6	9
3	3.1- 6 million $	8	12
4	6.1-12 million $	5	7
5	More than 12 million $	48	69

Table.7 shows that the result above show that 3% from the respondents companies have implemented projects with Average yearly value of one million dollars or less during the past five years, while 9 % from 1.1 to 3, 12% from 3.1 to 7 million, 7% From 7.1 to 15 million, and 69% more than 15 million.

The majority of targeted companies are located between more than 15 million US Dollar. This results refer to the large size of projects that undertaken by these companies and large financial and competitive capabilities.

Table.8 The result of Number of Experience years of the company since its establishment

N	Number of Experience years of the company since its establishment	F	%
1	3years or less	0	0
2	4-9 years	8	12
3	10-15 years	7	10
4	More than 15 years	54	78

Table.8 shows that the results above show that 12% from the targeted companies are working since 4 to 9 years, while 10% are working since 10 to 15 years, and 78% from this companies are working since more than 15 years, this mean that the targeted companies majority has long Experience in implement construction projects in Iraq.

6.2. Overhead costs concept and Management

The result of part two which is Overhead costs concept and Management include two group with eight questions illustrated in the tables(9-10-11-12-13-14-15) and **Fig.2.**

Table .9 The usually responsible about estimating the overhead costs at the pricing of tender

N	The estimator of the overhead costs at the pricing of tender	F	%
1	Chairman of Directors Board	5	7
2	employee Specialized in pricing	54	78
3	Professional employee	9	13
4	assign any employee for the task	1	2

Table.9 shows that 7% from the respondents "Who is responsible usually about estimating the overhead costs at the pricing of tender " Chairman of Directors Board " , while 78% is " employee Specialized in pricing " , and 13% from the respondents " Professional employee" and 2% "assign any employee for the task".

The results indicate that majority of targeted companies depended on employee Specialized in pricing which mean that estimation of overhead costs is very important and critical for this companies to win the tender and avoid the loss after winning the teaser.

Table .10 The result of (What are the sources which using when estimation the overhead costs)

N	The sources which using when estimation the overhead costs	F	%
1	return to the company records	1	1
2	questionnaire the stakeholders at that time	10	15
3	Both previous resources	57	83
4	other resource	1	1

Table.10 show that 1% from the respondents that their companies depend on return to their records as a sources to estimation the overheads costs, while 15 % " questionnaire the stakeholders at that time", 83% from the respondents that their companies depend on both of the above sources in their estimations, and 1% from the companies has used another sources.

The results above indicate that the majority of respondents companies don't depend on records alone but also depend on questionnaire the stakeholders at that time.

Table .11 number of previous years for the historical records which are depended in estimation contracts volume expected to be obtained by these companies over one year

N	number of previous years for the historical records which are depended in estimation contracts volume expected to be obtained by your company over one year	F	%
1	1 year	19	28
2	2 years	21	30
3	3 years	9	13
4	4 years or more	5	7
5	Not applied	15	22

Table.11 shows that 28% from the respondents said that their companies depend on 1 year from historical data to estimation the expected yearly volume of contracts to be obtained, while 30% " 2 years", 13% " 3 years", 7% " 4 years or more", and 22% from the respondents said that he historical data don‘t depended by their companies in estimation the yearly volume of contracts expected to be obtained .

The results reflect that 78% of companies in Iraq depend on the historical records Whether they are depend one, two, three or four years, and one from each four companies don't depend on the historical records. This mean there are clear important in overhead estimation accurately.

Table .12 number of previous years for the historical records which are depended in estimation the involvement in tenders by these companies over one year

N	number of previous years for the historical records which are depended in estimation the involvement in tenders by your company over one year	F	%
1	1 year	13	19
2	2 years	12	17
3	3 years	19	28
4	4 years or more	2	3
5	Not applied	23	33

Table.12 shows that 19% from the respondents said that their companies

depend on 1 year from historical data to estimation the involvement in tenders, while 17% " 2 years", 28% " 3 years", 3% " 4 years or more", and 33% from the respondents said that he historical data don‘t depended by their companies in estimation the volume of involvement in tenders.

The results reflect that 67% of companies in Iraq depend on the historical records Whether they are depend one, two, three or four years, and one from each three companies don't depend on the historical records. This mean also there are clear important in overhead estimation accurately and cover the expenses of home office overhead and competition strongly .

Table.13The used way to determine the project overheads costs by your company

N	The used way to determine the project overhead costs by your company	F	%
1	Detailed calculation depend on the contractual condition	15	22
2	As Percentage of total tender cost	23	33
3	As a lump sum is added to the tender value	2	3
4	As Percentage of the item direct cost	10	14
5	different from project to another	19	28
6	Other way	0	0

Table.13 shows that 22% from the respondents said that the way used by their companies to calculation the project overhead costs based on the Detailed calculation depend on the contractual condition, while 33% " as Percentage of total tender cost", 3% "as a lump sum is added to the tender value", 14% "as Percentage of the item direct cost", and 28% " different from project to another".

The results above shown that one of each three companies followed " Percentage of total tender costs". This may reflect importance the total value from perspective this companies without consideration the other matters and may reflect that most of owners depend constant percentages from the total proximal direct costs . While one of each four companies followed " Detailed calculation depend on the contractual condition ". This may reflect importance the specific requirements in contract from perspective this companies, and as same percentage as mentioned it is "different from project to another", this mean there are consideration to all or most the condition related with the project which may effect on estimate project overhead costs.

Table .14The used way to determine the home office overheads costs by your company

N	The used way to determine the home office overheads costs by your company	F	%
1	Detailed calculation depended on the records and experience	10	14
2	As Percentage of total tender cost	31	45
3	As Percentage from the costs of the labors in the project	0	0
4	As Percentage of the direct costs for each item	7	10

5	different from project to another	17	25
6	Not applied	4	6

Table.14 shows that 14% from the respondents said that the way used by their companies to calculation the home office overhead costs based on the Detailed calculation depend on the contractual condition, while 45% " as Percentage of total tender cost", 10% " as Percentage of the direct costs for each item ", 25% " different from project to another ", and 6% " not applied ".

The results above shown that the majority companies followed " Percentage of total tender cost". This may reflect importance the total value from perspective this companies without consideration the other matters and may reflect that most of owners depend constant percentages from the total proximal direct costs. Follow it method of " different from project to another " as percentage, this mean there are considerations different from project to another .

Table .15 The used way to allocate the overhead costs on the tender items

N	The used way to allocate the overhead costs on the tender items	F	%
1	Equally allocation (each item according to it proportion from the total contract)	40	58
2	Loading on particular items	5	7
3	Front loading	1	2
4	Back loading	1	1
5	There are not particular way	20	29
6	Not applied	2	3

Table.15 shows that 58% from the respondents said that the way used by their companies to allocate the overhead costs based on the " Equally allocation (each item according to it proportion from the total contract)", while 7% " Loading on particular items", 2% " Loading on particular items", 1% " Back loading ", 29% " there are not particular way "and 3% " not applied "

the majority companies distribute overhead costs on each item according to it proportion from the total contracts consider good case. this case helps on the difference between contractors and owners about determine the contractor financial claimants because suspension and delay by the owners.

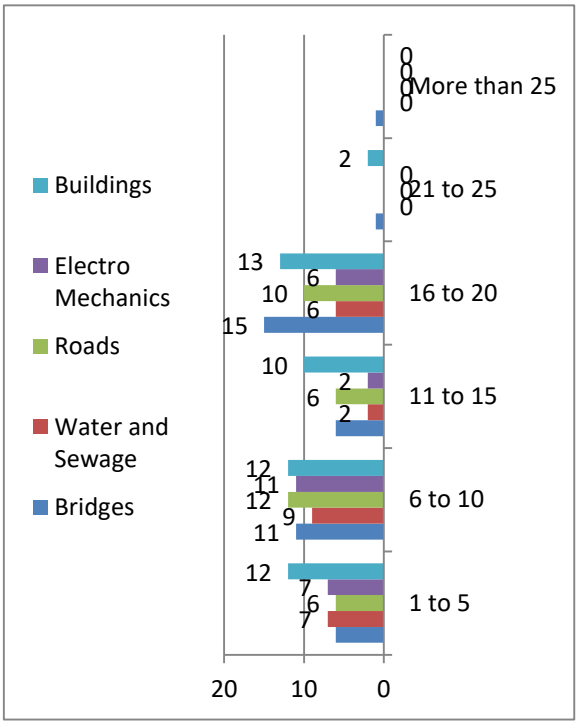

Fig. 2 The percentage of overhead costs for different projects

Fig.2 shows in the X- axis represent the classes intervals which suggested from researcher to distribution the answers on the base of those classes, while the Y- axis represent the frequencies of answers, the higher percentage of estimation overhead costs during pricing the tender mentioned from the respondents are between (16-20)% for buildings and Bridges, and between (6-10)% for roads, water and sewage, and electro mechanics works.

6.3. Influential factors on overhead costs

The result of analysis five-scale likert for Influential factors on overhead costs illustrated in table (16)

Table.16 The arithmetic mean of affecting Factors on Overhead Costs and degree of effect

	Main Influencing	Sd. Deviation	Mean	Degree of Effect	Sub Factors	Sd. Deviation	Mean	Degree of Effect
1.	**1-Client Requirement and Policy**	0.89	4.22	Very high	The schedule of payments and client's commitment	0.75	4.39	Very high
2.					strictness of client in supervision	0.89	4.03	High
3.					Contract type & conditions	0.82	4.16	High
4.					Method of tendering	0.91	3.62	High
5.					required bond and warranty	0.97	3.67	High
6.	**2-Company Experiences and Policy**	0.57	4.38	Very high	project designing necessities	0.97	3.90	High
7.					Client response towards financial claims.	0.79	4.23	Very high
8.					Intensity of Competition from other contractors	0.86	3.86	High
9.					delay of client in ending Contractors contracts immediately after the financial crisis	0.89	4.03	High
10.					The Experience in Implementing Similar Projects	0.47	4.68	Very high
11.					Assigning Works to Subcontractor	0.68	3.84	High
12.					Taking Wrong Decisions	0.92	3.94	High
13.					Method of implement the Project	0.75	4.39	Very high
14.					Required quality level in project implementation	0.66	4.51	Very high

15.	**3-Economical Factor**	0.72	4.20	Very high	The Economic Inflation and Interest Rate in Area	0.80	4.09	High
16.					Volume of Advertised Projects and Works In Constructio n Market	0.71	4.03	High
17.					Availability of Similar Project	0.77	3.70	High
18.					Stakeholder s Income	1.16	3.35	Med ium
19.	**4-External**	0.86	3.64	High	The closure of roads and the Lateness in materials arrival	0.78	4.43	Very high
20.					expenses of Resolving disputes ownership of the project land	1.14	4.01	High
21.	**5-Finance factor**	0.78	4.32	Very high	Availability of Contractor Cash	0.63	4.57	Very high
22.					The Company Obtain Banking Facilities	0.87	4.03	High
23					Need of Work	0.73	4.18	High
24.					Total Contract Value	0.76	4.08	High

25.	**6-Organization**	0.87	4.13	High	The value and number of projects that are contract annually	0.86	3.96	High
26.					Company's Growth	0.79	4.07	High
27.					Classificatio n of Company	0.91	4.03	High
28.					Government Regulation	0.87	4.13	High
29.	**7-Project Environment& Condition**	0.72	4.20	Very high	Project Complexity	0.75	4.07	High
30.					Project Location	0.72	4.33	Very high
31.					Size of Project	0.70	4.22	Very high
32.					Scope of Work	0.76	3.99	High
33.					Project Period	0.86	4.22	Very high
34.					Site Layout	0.97	3.86	High
35.					Project Type	0.75	4.10	High
36.					Environmen tal Condition	0.95	3.80	High
37.	**8-Contractor Relationships**	0.97	3.33	Medium	Company's Relation With Sub-contractors	0.74	4.12	High
38.					Familiarity and Influence In Project Area (Native Contractor)	0.85	3.70	High

39.					The Contractor's Experience With the Client (The Previous Relationship Between them)	0.87	3.99	High
40.					Foreign Joint Venture	1.14	3.38	Medium

The results in table.16 showed that the main factors (Client Requirement and Policy, Company Experiences and Policy, Economical Factor, the Finance, and Project Environment and Condition) have very high impact on overhead costs Where the AM for these factors ranged between (4.20-5), while the (External and Organization) factors have high impact on overhead costs Where the AM for these factors ranged between (3.40- less than 4.20), but the Contractor Relationships have AM (3.3333), this mean the impact is Medium through the direct answers on five -scale likert for the main factors, while through calculation the average of AMs of the four sub factors related with this main factor result (3.793475) therefore the impact of Contractor Relationships became high.

The sub factors related with Client Requirement and Policy contain of (9) factors, (The schedule of payments and client's commitment, Client response towards financial claims) obtained AMs range between (4.20-5) which have very high impact on overhead cost, while the (strictness of client in supervision, Contract type & conditions, Method of tendering, required bond and warranty, project designing necessities, Intensity of Competition from other contractors, delay of client in ending Contractors contracts immediately after the financial crisis) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub factors related with Company Experiences and Policy contain of (5) factors, (The Experience in Implementing Similar Projects, Method of implement the Project, and Required quality level in project implementation) obtained AMs range between (4.20-5) which have very high impact on overhead costs, while the (Assigning Works to Subcontractor, and Taking Wrong Decisions) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub factors related with Economical Factor contain of (4) factors, (The Economic Inflation and Interest Rate in Area, Volume of Advertised Projects and Works In Construction Market, and Availability of Similar Project) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Stakeholders Income) obtained AMs range between (2.60- less than 3.40) which has Medium impact on overhead costs.

The sub factors related with External Factor contain of (2) factors, (The closure of roads and the Lateness in materials

arrival) obtained AM range between (4.20-5) which has very high impact on overhead costs , while the (expenses of Resolving disputes ownership of the project land) obtained AMs range between (3.40- less than 4.20) which has high impact on overhead costs.

The sub factors related with Finance factor contain of (5) factors, (Availability of Contractors Cash) obtained AM range between (4.20-5) which has very high impact on overhead costs , while the (The Company Obtain Banking Facilities, Need of Work, Total Contract Value, and The value and number of projects that are contract annually) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub factors related with Organization factor contain of (3) factors, the (**Company**'s Growth, Classification of Company, and Government Regulation) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub factors related with Project Environment and Condition contain of (8) factors, (Project Location, Size, and Period) obtained AM range between (4.20-5) which has very high impact on overhead costs , while the (Project Complexity, Project Type, Scope of Work, Site Layout and Environmental Condition) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub factors related with Contractor Relationships contain of (4) factors the (Company's Relation With Subcontractors, Familiarity and Influence In Project Area, Contractor's Experience With the Client) obtained AM range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Foreign Joint Venture) obtained AMs range between (2.60-less than 3.40) which has Medium impact on overhead costs.

6.4.The results of items of Home Office Overhead Costs

The result of analysis five-scale likert for items of Home Office Overhead Costs illustrated in **Table .17**

Table .17 The AMs. for items of Home Office Overhead Costs and degree of effect

N	Main items	Sd. Deviation	Mean	Degree of Effect	Sub items	Sd. Deviation	Mean	Degree of Effect
1.	1- Company Service Requirements	0.814	4.12	High	Bills of Electricity & Water	0.93	3.43	High
2.					The Cost of Home Office Rental	1.11	3.71	High
3.					Purchase the Computer Software	0.93	3.33	Medi
4.					The Advice's Services	0.94	3.77	High
5.					Training Programs Costs	0.93	3.41	High

6.					Advertising & Promotion	0.90	3.07	Medium
7.					Stationeries	0.99	3.12	Medium
8.					Costs of Maintenance and Repairs of Home Office	1.08	3.13	Medium
9.					Office supplies (Furniture, Computers, Printers, Copy Machines, camera & Fax)	0.93	3.75	High
10.					Electric generators and fuel required	0.64	4.22	Very high
11.	**2.Dispatch, Transportation & Communication**	0.88	3.62	High	Bills of Mobiles , Internet & Telephone	0.84	3.23	Medium
12.					Vehicles of Home Office and Required Fuel	0.73	3.94	High
13.					Costs of Travel & Accommodation	0.83	3.57	High
14.	**3.Food & Hospitality Requirements**	0.89	3.39	Medium	Drinks & Hospitality Requirement	0.97	2.77	Medium
15.					Food of Head Office Employees	1.13	2.77	Medium
16.	**4.Licenses, Bonds & Insurances**	0.79	3.83	High	Licenses such as Municipal License, Membership of Contractors Union &Engineers union or any Other Membership	1.13	3.46	High
17.					Dues & Subscriptions (Cost of Rehabilitation & Gradient in Membership	0.95	3.64	High
18.					Purchasing of Tenders Documents & Bid Bond Guarantee	0.84	3.90	High
19.					The Healthy Insurances	0.999	3.18	**Medium**
20.					Company Insurances & Taxes (Everything not Project-Related)	1.01	3.55	High
21.	**5.Salaries, Grants and Incentives**	0.69	4.38	Very high	Salary of Office Manager	0.95	3.87	High
22.					Salaries of Home Office Engineers	0.96	4.06	High
23.					Home Office Quantities Surveyor salary	0.92	3.83	High

24.					Salaries of Accountants & Administrators Staff	0.90	3.88	High
25.					Salaries of Home Office Drivers	0.86	3.71	High
26.					wages of Service occupations (Office Boy, Watchmen, Chef, Generator operator)	0.88	3.62	High
27.					Donations (Charitable Contributions)	1.11	2.74	Medium
28.					Postage & Courier	1.12	2.67	**Medium**
29.					Employees Granting & Rewards	1.00	3.57	High
30.	**6.Security Requirements**	0.94	3.97	High	The costs of monitoring and guarding requirements (monitoring cameras, etc.)	0.99	3.84	High

The results in **Table.17** showed that the main items (Salaries, Grants and Incentives) has very high impact on overhead costs Where the AM for this item ranged between (4.20-5), while the (Company Service Requirements, Dispatch, Transportation & Communication, Licenses, Bonds & Insurances, and Security Requirements) items have high impact on overhead costs Where the AM for these items ranged between (3.40- less than 4.20), but the Food & Hospitality Requirements has AM (3.3913), this mean the impact is Medium through the direct answers on five -scale likert for the main items, and through calculation the average of AMs of the two sub items related with this main item result (2.7681) this reflect that direction of the sample about the impact of Food & Hospitality Requirements remained Medium.

The sub items related with Company Service Requirements contain of (9) items (Bills of Electricity & Water, Cost of Home Office Rental, Advice's Services, Training Programs Costs, Office supplies (Furniture, Computers, Printers, Copy Machines, camera & Fax)) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Purchase the Computer Software, Advertising & Promotion, Stationeries, and Costs of Maintenance & Repairs of Home) obtained AMs range between (2.60 - less than 3.40) which have Medium impact on overhead costs.

The sub items related with Dispatch, Transportation & Communication contain of (3) items (Vehicles of Home Office and Required Fuel, Costs of Travel & Accommodation) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Bills of Mobiles , Internet &

Telephone) obtained AMs range between (2.60 - less than 3.40) which have Medium impact on overhead costs.

The sub items related with Food & Hospitality Requirements contain of (2) items the (Drinks & Hospitality Requirements, Food of Head Office Employees) obtained AMs range between (2.60 - less than 3.40) which have Medium impact on overhead costs.

The sub items related with Licenses, Bonds & Insurances contain of (5) items (Licenses such as Municipal License, Membership of Contractors Union &Engineers union or any Other Membership, Dues & Subscriptions (Cost of Rehabilitation & Gradient in Membership), Purchasing of Tenders Documents & Bid Bond Guarantee, Company Insurances & Taxes (Everything not Project-Related)) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Healthy Insurances) obtained AMs range between (2.60 - less than 3.40) which have Medium impact on overhead costs.

The sub items related with Salaries, Grants and Incentives contain of (9) items (Salary of Office Manager, Salaries of Home Office Engineers, Home Office Quantities Surveyor salary, Salaries of Accountants & Administrators Staff, Salaries of Home Office Drivers, wages of Service occupations (Office Boy, Watchmen, Chef, Generator operator), Employees Granting & Rewards) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Donations (Charitable Contributions), Postage & Courier) obtained AMs range between (2.60 - less than 3.40) which have Medium impact on overhead costs.

The sub items related with Security Requirements contain of (1) item The (costs of monitoring and guarding requirements (monitoring cameras, etc.)) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

6.5.The results of items of Project Overhead Costs

The result of analysis five-scale likert for items of Project Overhead Costs illustrated in **Table .18.**

Table .18 The AMs for items of Project Overhead Costs and degree of effect

N	Main items	Sd. Deviation	Mean	Degree of Effect	Sub items	Sd. Deviation	Mean	Degree of effect
1.	1.Dispatch, Transportation & Communication	0.78	3.84	High	Cost of Equipping Access Roads	0.97	3.81	High
2.					Bills of Mobiles , Internet & Telephone	0.89	3.09	Medium
3.					Vehicles of project and Required Fuel	0.74	4.04	High
4.					Job Transportation	0.78	4.01	High

5.	**2.Field Work requirements**	0.81	4.14	High	Bills Of Water & Electricity	0.92	3.54	High
6.					Electric generators and fuel required	0.68	4.20	Very high
7.					Equipment Contingency	0.81	3.70	High
8.					Sewage Disposal	1.12	3.51	High
9.					Restrictions the Dust Nuisance & Noise	1.11	3.10	Medium
10.	**3.Food & Hospitality Requirements**	0.94	3.3623	Medium	drinks & Hospitality Requirements	1.00	2.93	Medium
11.					Food of project staff	1.14	3.45	High
12.	**4.Security Requirements**	1.03	3.87	High	Cost of Protection Fence	0.80	4.03	High
13.					The costs of monitoring and guarding requirements (monitoring cameras, etc.)	0.95	3.94	High
14.	**5-Project Office Requirements**	0.84	3.65	High	Costs of Field Offices Rental	0.74	3.84	High
15.					Field Offices Furniture	0.80	3.78	High
16.					Computers & Printers	0.86	3.82	High
17.	**6.Safety & Health**	0.85	3.91	High	Xerox	0.91	3.86	High
18.					Videos & Photos	0.95	3.36	High
19.					Cleaning & Rubbish Removal	0.80	3.97	High
20.					Stationery & Publications	0.83	3.49	High
21.					Other General Costs as (Newspaper & Est.)	1.75	2.59	Low
22.					Health & Safety At Work	0.71	4.17	High
23.					First Aid Kit & Medical Expenses	1.01	3.83	High
24.					Environmental Protection (Summer/Winter)	0.96	3.48	High
25.	**7.Salaries, grants and incentives**	0.81	4.23	Very high	Salaries of Supervision & Project Management	0.73	4.41	Very high
26.					Salary of Site Engineer	0.81	4.32	Very high
27.					Salaries of Mechanical & Electrical Engineers	0.78	4.28	Very high
28.					Surveyor Salary	0.77	4.23	Very high
29.					Project Accountant Salary	.81414	4.1159	High

30.					Salaries of Drivers	0.82	4.00	High
31.					Forman Salary	0.80	4.03	High
32.					wages of Service occupations (Office Boy, Watchmen, Chef, Generator operator)	0.82	3.78	High
33.					Cost of Demobilization	0.98	3.54	High
34.	**8.Temporary Works at Site**	0.80	3.65	High	Temporary Accommodation in Site (Sheds)	0.88	4.10	High
35.					Site Stores	0.67	4.43	Very high
36.					Temporary Utilities(Toilet, Bathroom, Kitchen)	0.84	4.06	High
37.					Other Temporary Buildings at Site	0.84	3.77	High

The results in **Table.18** showed that the main items (Salaries, grants and incentives) has very high impact on overhead costs Where the AM for this item ranged between (4.20-5), while the (Dispatch, Transportation & Communication, Field Work Requirements, Security Requirements, Project Office Requirements, Safety & Health, Temporary Works at Site) items have high impact on overhead costs Where the AM for these items ranged between (3.40- less than 4.20), but the Food & Hospitality Requirements has AM (3.3623), this mean the impact is Medium through the direct answers on five - scale likert for the main items, and through calculation the average of AMs of the two sub items related with this main item result (3.1884) this reflect that direction of the sample about the impact of Food & Hospitality Requirements remained Medium.

The sub items related with Dispatch, Transportation & Communication contain of (4) items (Cost of Equipping Access Roads, Vehicles of project and Required Fuel, Job Transportation) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Bills of Mobiles , Internet & Telephone) obtained AMs range between (2.60 - less than 3.40) which has Medium impact on overhead costs.

The sub items related with Field Work Requirements contain of (5) items (Electric generators and fuel required) has very high impact on overhead costs Where the AM for this item ranged between (4.20-5) while the (Bills Of Water & Electricity, Equipment Contingency, Sewage Disposal) items have high impact on overhead costs Where the AM for these items ranged between (3.40- less

than 4.20), but the (Restrictions the Dust Nuisance & Noise) has AM (**3.1014)**, this mean the impact is Medium.

The sub items related with (Food & Hospitality Requirements) contain of (2) items (Food of project staff) obtained AM range between (3.40- less than 4.20) which have high impact on overhead costs, while the (drinks & Hospitality Requirements) obtained AM range between (2.60 - less than 3.40) which has Medium impact on overhead costs.

The sub items related with (Security Requirements) contain of (2) items (Cost of Protection Fence, The costs of monitoring and guarding requirements (monitoring cameras, etc.)) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub items related with Project Office Requirements contain of (8) items (Costs of Field Offices Rental, Field Offices Furniture, Computers & Printers, Xerox, Videos & Photos, Cleaning & Rubbish Removal, Cleaning & Rubbish Removal, Stationery & Publications) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs, while the (Other General Costs as (Newspaper & Est.)) obtained AMs range between (1.80 - less than 2.60) which has Medium impact on overhead costs.

The sub items related with Project Office Requirements contain of (8) items (Health & Safety At Work, First Aid Kit & Medical Expenses, Environmental Protection (Summer/Winter)) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub items related with Salaries, grants and incentives contain of (4) items, (Salaries of Supervision & Project Management - Site Engineer - Mechanical & Electrical Engineers - Surveyor) obtained AMs range between (4.20 - 5) which have very high impact on overhead costs, while the (Salaries of Project Accountant – Drivers – Forman, wages of Service occupations (Office Boy, Watchmen, Chef, Generator operator), Cost of Demobilization) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

The sub items related with Temporary Works at Site contain of (4) items, (Site Stores) obtained AMs range between (4.20 - 5) which has very high impact on overhead costs, while the (Temporary Accommodation in Site (Sheds), Temporary Utilities(Toilet, Bathroom, Kitchen), Other Temporary Buildings at Site) obtained AMs range between (3.40- less than 4.20) which have high impact on overhead costs.

7.The Conclusions and Recommendations

1. Two only from effected factors on overhead costs were medium importance, those are (Stakeholders Income and Foreign Joint Venture), while the degree of effecting of thirty eight from the forty factor were very high and high, therefor the contractor and the Chairman of Directors Board of this companies should that take this factors with more seriously during pricing the tenders, these factors increase their understanding, and their competitiveness in the tenders.
2. in spite of the current method to calculate the overheads depended on equally allocation (each item according to it proportion from the total contract) which consider good case because it will help in solving the claims which occur as result to the suspension, delay caused by the owners, and minimizing those disputes between the parties when they want to determine the financial damages which deserved by contractor, but it is don't solve the problems which occurred as result the financial crisis in Iraq, therefor should finding or modified the government regulars to insure contractors rights.
3. Finding a clearer method to be agreed with owners to calculate the overhead during pricing tenders help avoid disputes when occurring suspensions caused by the owners.
4. the factor "delay of client in ending contractors contracts immediately after the financial crisis" caused large financial damages for the contractors and companies especially those contracts which awarded by Government ministries and governorates, this factor obtained the respondents' agree with high degree that require finding fair solutions for this problems to insure rights of contractors and companies related mainly with overhead costs expensed during suspension on these projects after the financial crisis for the period until ending this contracts.

References:

1.البلداوي ، عبد الحميد عبد المجيد، "كتاب الاحصاء للعلوم الادارية والتطبيقية" جامعة الاسراء، الاردن، 1997

2.الفرا، وليد عبدالرحمن خالد، تحليل بيانات الاستبيان باستخدام البرنامج الاحصائي SPSS ، ادارة البرامج والشؤون الخارجية ، الندوة العالمية للشباب الاسلامي ، 2009.

3.د. عز عبد الفتاح ، (مقدمة في الاحصاء الوصفي والاستدلالي باستخدام (SPSS)) ج 3 (ص 541)

4.Chan, C. T. (2012). The principal factors affecting construction project overhead expenses: an exploratory factor analysis approach. Construction Management and Economics, 30(10), 903-914.

5. Dagostino, F. R., and Feigenbaum, L. (2003). Estimating in Building Construction (6th ed.). Pearson Education, Upper Saddle River, NJ.

6. Lowe, S., Bielek, R. and Burnham, R. (2003), "Compensation for contractors' home office overhead: A Synthesis of highway practice", American Association of State Highway and Transportation Officials, National Cooperative Highway

Research Program, National Research Council (U.S.), Los Angeles, California
7. Neil, J. M. (1981), "Construction cost estimating for project control", Prentice-Hall, Englewood Cliffs, N.J.
8.Peurifoy, R. L., and Oberlender, G. D. (2002), Estimating construction costs‖, 5th edition, McGraw-Hill, New York.
9. Plebankiewicz, E., and Leśniak, A. (2013). Overhead costs and profit calculation by Polish contractors. Technological and Economic Development of Economy, 19(1), 141-161.
10. Taylor, G.R., The Importance of Estimating OH, Cost Engineering (AACE), 36(2), 1994, pp. 15-18.
11.Turskis, Z., Tamošaitienė, J., and Zavadskas, E. K. (2008). Contractor selection of construction in a competitive environment. Journal of Business Economics and Management, (3), 181-187.

تقييم الكلف الادارية في الصناعة الانشائية العراقية

أ.م. د سوسن رشيد محمد
كلية الهندسة – جامعة بغداد

سلمان احمد محمد الظاهري
طالب ماجستير في ادارة مشاريع الانشائية
كلية الهندسة – جامعة بغداد

الخلاصة:
بعد (2003)، الصناعة الانشائية اصبحت واحدة من القطاعات الاكثر اهمية في العراق، التنافس ازداد بين الشركات الانشائية التي اكثرها تأسست بعد ذلك التاريخ ، بعض الشركات استطاعت ان تنمو وتكتسب خبرة جيدة والبعض الاخر فشلوا في تنفيذ المشاريع التي منحت لهم والذي انعكس سلبا على تنفيذ تلك المشاريع ، مما سبب توقفات عن العمل ونزاعات. الهدف الرئيسي الذي يجب ان يسعى له كل الاطراف هو تنفيذ المشاريع بالمواصفات والجودة والكلفة والوقت المطلوب. الادارة الحكيمة التي اصبحت ضرورة للصناعة الانشائية العراقية والبنود المحكمة والعادلة التي يجب ان يحتويها العقد تساهم بشكل اساسي في تحقيق هذا الهدف وكذلك تساهم في تقليل النزاعات بين الاطراف. هذا البحث يهدف بشكل رئيسي الى تقييم تكاليف النفقات الادارية في الصناعة الانشائية العراقية وتحري العوامل التي تؤثر على هذه التكاليف وفقراتها لزيادة وعي المقاولين لأهمية التقدير الدقيق لهذه التكاليف في مشاريعهم لتجنب الاضرار المالية التي قد يتكبدوها نتيجة عدم التقدير الدقيق لتلك التكاليف وبالتالي تنعكس سلبا على تنفيذ المشروع .
الكلمات المفتاحية : الكلف الادارية ، العراق ، الصناعة الانشائية.