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An Evaluation of the Saudi Contract for Public Works

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Abstract. The contract for public works is the only national standard construction contract document of its kind in Saudi Arabia. Despite the passage of almost 20 years since its institution, vast amount of experience accumulated from its wide usage in various types of public works projects, its implementation as one-type-fits-all, and some persisting contention particularly by contractors about its lack of equitability; little in the way of scientific research has been reported about its evaluation. This paper reports on a survey of construction main participants regarding evaluation of this standard form of contract. Respondents were drawn from the three different contracting parties and were asked to indicate their opinion about the contract based upon 11 evaluation attributes. Survey results indicated that the contract is barely adequate, raising concerns about its efficiency and effectiveness. Given the fact that understanding contracts is fundamental to construction management, it is hoped that the views revealed through this research will be instrumental in the development of the Saudi construction industry.

Keywords: Public works projects, Evaluation, Construction, Contracts, Contractors, Consultants, Saudi Arabia.

Introduction

The use of standard forms of construction contracts is both practical and economical. In Saudi Arabia, government contracts for the construction of public works are required by statuary law to be fixed-price contracts awarded through competitive bidding. During the Seventh National Development Plan (2000-2005), some 10,000 contracts totaling in excess of SR 150 billion were let by the various ministries, corporations, and agencies of the government. The main vehicle for executing those contracts is the contract for public works [1], which represents the first and the only attempt at standardization of construction contracts in the country.

This standard contract consists of two parts. Part one is entitled 'the principal document of the contract' and is composed of eight articles dealing with matters not unlike some of those generally stated in standard agreement and/or bid forms of construction contracts. Part two is called 'general conditions' and is composed of 61

clauses expressing terms and conditions similar to some of those usually found in standard general conditions of those contracts. The contract was statued by the Saudi Council of Ministers in the late 1980s based on a proposal drafted by then the Ministry of Finance and National Economy [2]. Since that time, it has been used in the construction of all types of public projects leading to accumulation of large body of experiences. Perhaps most significant is that in practice it has been utilized as a sort of one type for all the different kinds of construction contracts represented by standard forms published by professional engineering and architectural institutes and societies worldwide. Despite these aspects of the contract and some persisting contention especially by contractors about its inequitability [3], little scientific research has been reported about its analysis, design or evaluation. This situation spurred the undertaking of this research study - to evaluate the Saudi standard public works contract.

Research Methodology

The research effort consisted of three phases: literature search, questionnaire survey, and statistical data analysis. The results of the first phase were the standing on the dearth of research about the contract as well as the identification of an appropriate method of evaluation. An extensive literature search unearthed little concerning the contract. Only two early studies [4-6] were found to have touched upon assessment of the contract, albeit in a rather superficial ways. This is understandable since neither study was devoted to the contract or its evaluation. As to its analysis, a more recent study has sought to compare it with the FIDIC and resulted in highlighting some similarities and differences between the two contracts [7].

A simple quantitative method for evaluating the general conditions of any construction contract was proposed in [8]. The method is essentially the weighted point approach commonly used in multi attribute decision making; evaluation problems in particular. As its name implies, all attributes are weighted for importance in each evaluation situation. The method is represented by an instrument consisting of a number of evaluation elements (attributes) along with their operational definitions. Eleven attributes were defined: clarity, conciseness, completeness, internal consistency, external consistency, practicality, fairness, effect on quality, effect on cost, effect on schedule, and effect on safety. An evaluator using this instrument for a particular form of general conditions is required to assign the relative importance of the 11 defined attributes, by distributing 100 points over them. Further, his level of agreement with each of the statements representing the attributes needs to be indicated on a 5-level Likert scale ranging from strongly agree (10) to strongly disagree (2). Once this has been done, it was further suggested that a total evaluation score be computed by the following formula and then interpreted as depicted in Fig. 1.

$$TES = \sum_{i=1}^{11} w_i \; x \; a_i \; / 10 \qquad (1)$$

where

TES = total evaluation score;
w_i = weight (importance) of attribute i;
a_i = agreement level related to attribute i.

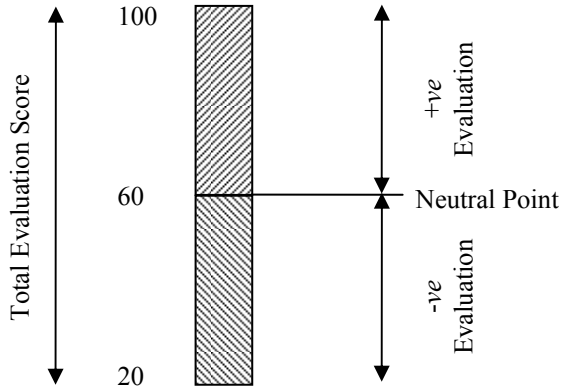

Fig. 1. Interpretation of total evaluation score.

This instrument was adapted as the core two parts of this study's questionnaire. They were prefaced with a part seeking general information about the respondent and his organization and complemented with a forth regarding sufficiency and effectiveness of the engineer's role in the contract, in order to form the questionnaire of the survey, as indicated shortly.

In the second phase of the research effort, the four-part questionnaire survey was administered to solicit the opinions of the main participants in the construction work: government owners, contractors and architectural/engineering (A/Es consultants) offices. Random selection of the samples was limited by certain characteristics of the domestic construction industry. For instance, as has been widely reported in the public press recently by top officials of the Saudi Council of Engineers, more than 90% of the engineering work is dominated by about 15% of those licensed in the county. An even more disturbing statistics have been reported elsewhere [9]. A comparable situation appears to exist with respect to contractors. In view of these and other limitations as well as a rather low initial rate of response, another sampling technique was used instead. An attempt was made to target the main parties most involved in contract applications through an informal delphi technique coupled with some sort of peer selections.

The survey was distributed in the Riyadh area, to a cross-section of engineers within the construction industry. In total 180 returns of respondents from 28 government owners,

60 contractors, and 60 consultants were eventually received. Most of the contractors are ranked in the top 'Grade I' class by the Contractors Classification Agency in Saudi Arabia, whereas the great majority of the designers are among the most dominant in the market. Note that owing to the relatively small population of the public owners and their huge annual construction programs, they were surveyed at the rate of approximately two questionnaires per, for the most part, ministry. Some of the more detailed characteristics of the participants as gleaned from the responses to part one of the survey questionnaire are as follow. The average annual value of executed projects as estimated by the respondents ranged between SR 36 million and SR 465 million. They also indicated, based on the fields of specialization categories of the Saudi System for Contractors Classification, under the auspices of the Deputy Ministry for Contractors Classification, the projects types as shown in Table 1. Finally, 70% of consultant, 88% of contractor, and 93% of owner respondents had more than 8 years of experience in the construction industry. These characteristics make the views expressed more noteworthy and give more credibility to the results of the study and hence its findings.

Table 1. Characterization of participants construction work

Party	Buildings		Roads		Water & sewage works		Industrial works		Others	
	Count	%	Count	%	Count	%	Count	%	Count	%
Owner	45	75	18	30	17	28.3	6	10	8	13.3
Contractor	48	80	31	51.6	32	53.3	12	20	8	13.3
Consultant	54	90	24	40	11	18.3	10	16.6	5	8.3

Note that neither the counts nor the percentages add up to the sample or 100 percent, respectively, as a party can classify itself in more than one category depending on its construction work.

Some of the most widely applied statistical techniques were used to analyze the samples data and test the significance of the results obtained, in order to generalize the findings to the larger populations. The SPSS software package release 11 for Windows [10] was utilized for this purpose. The tests may seem a bit advanced, they have not been a prominent feature of construction studies of this sort in the developing world in particular. Their use here, besides the usual scientific reason for statistical validity, is particularly instructive for several reasons. In construction contracts, the engineer is the 'interpreter'; 'referee'; 'quasi-adjudicator'; or 'arbiter' and often the contract administrator, nothing is ever absolutely certain, and precise wording is decisive. In any case, the engineer needs all the techniques he can muster to properly carry out his role in a construction contract.

Analysis of Data and Results

Relative importance of evaluation attributes

The average value and standard deviation results of each respondents group's opinion with respect to the levels of the importance of the evaluation attributes are represented in Table 2. The lower and upper bounds of the 95% confidence interval of corresponding population means are shown in Table 3.

Table 2. Summary of sample results: Levels of importance

Attributes	Owner		Contractor		Consultant	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Clarity	9.83	1.76	9.80	2.50	10.68	2.84
Conciseness	9.03	1.52	9.00	2.29	9.73	1.97
Completeness	9.40	1.82	9.45	2.13	9.17	2.16
Internal consistency	9.00	1.63	8.38	2.33	8.32	1.90
External consistency	10.98	1.66	10.63	2.07	9.62	1.89
Practicality	8.17	1.93	8.00	1.76	7.73	1.86
Fairness	7.78	1.93	7.77	4.07	8.13	3.54
Effect on quality	7.85	1.49	8.33	2.05	8.35	2.24
Effect on schedule	8.77	1.35	9.50	1.92	9.23	2.01
Effect on cost	9.32	2.23	10.00	2.94	9.23	2.21
Effect on safety	9.48	2.26	9.20	2.65	9.67	2.41

Table 3. Summary of results: Confidence intervals of importance levels

Attributes	Owner		Contractor		Consultant	
	95% Confidence interval		95% Confidence interval		95% Confidence interval	
	Lower	Upper	Lower	Upper	Lower	Upper
Clarity	9.38	10.29	9.15	10.45	9.95	11.42
Conciseness	8.64	9.43	8.41	9.59	9.23	10.24
Completeness	8.93	9.87	8.90	10.00	8.61	9.73
Internal consistency	8.58	9.42	7.78	8.99	7.83	8.81
External consistency	10.55	11.41	10.10	11.17	9.13	10.10
Practicality	7.67	8.67	7.55	8.45	7.25	8.21
Fairness	7.28	8.28	6.72	8.82	7.22	9.05
Effect on quality	7.46	8.24	7.80	8.86	7.77	8.93
Effect on schedule	8.42	9.11	9.01	10.00	8.71	9.75
Effect on cost	8.74	9.89	9.24	10.76	8.66	9.80
Effect on safety	8.90	10.07	8.51	9.89	9.04	10.29

As can be seen, there does not appear to be high disparities among the classes of respondents. This observation was tested using the one-way analysis of variance (ANOVA). This is essentially an *F*-test to determine if the mean of levels of importance for each of the attributes is similar for the three contracting parties. The results of ANOVA are exemplified by Table 4 which provides the SPSS output for the fairness attribute. Using an *F*-test at 95% confidence level indicates that there are no significant differences among the three parties in the means of the levels of importance, as exemplified by Table 4, except in the case of external consistency. For this one attribute, the observed significance level (*p*-value) is less than 0.05, indicating its mean level of importance differs among the parties. More advanced statistical analysis using Scheffe test revealed that this difference is due to consultants who disagree with the other two parties in this respect.

Table 4. Descriptive party statistics with ANOVA comparing fairness' level of importance across the parties (SPSS output)

Descriptives

	N	Mean	Standard deviation	Standard error	95% Confidence interval for mean	
					Lower bound	Upper bound
Owner	60	7.783	1.932	.249	7.284	8.282
Contractor	60	7.767	4.069	.525	6.716	8.818
Consultant	60	8.133	3.544	.457	7.218	9.049
Total	180	7.894	3.295	.246	7.410	8.379

ANOVA

	Sum of squares	df	Mean square	F	Sig.
Between groups	5.144	2	2.572	.235	.791
Within groups	1937.850	177	10.948		
Total	1942.994	179			

Levels of agreement with evaluation attributes

Respondents were asked to indicate their agreement or disagreement on the 5-level scale used to evaluate each attribute. Their responses with respect to each of the evaluation attributes are presented in Table 5.

Table 5. Perceptions of the contract with respect to the evaluation criteria

Party	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
1. Clarity										
Owner	0	0	3	5	6	10	41	68.3	10	16.7
Contractor	0	0	9	15	9	15	34	56.7	8	13.3
Consultant	2	3.3	2	3.3	11	18.3	44	73.3	1	1.7
All	2	1.1	14	7.8	26	14.4	119	66.1	19	10.6
2. Conciseness										
Owner	0	0	9	15	12	20	31	51.7	8	13.3
Contractor	2	3.3	10	16.7	15	25	27	45	6	10
Consultant	1	1.7	4	6.7	13	21.7	39	65	3	5
All	3	1.7	23	12.8	40	22.2	97	53.9	17	9.4
3. Completeness										
Owner	3	5	8	13.3	21	35	23	38.3	5	8.3
Contractor	3	5	6	10	24	40	22	36.7	5	8.3
Consultant	2	3.3	11	18.3	20	33.3	25	41.7	2	3.3
All	8	4.4	25	13.9	65	36.1	70	38.9	12	6.7
4. Internal consistency										
Owner	0	0	4	6.7	11	18.3	37	61.7	8	13.3
Contractor	1	1.7	6	10	18	30	30	50	5	8.3
Consultant	1	1.7	6	10	23	38.3	29	48.3	1	1.7
All	2	1.1	16	8.9	52	28.9	96	53.3	14	7.8

Table 5. Continued

Party	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	Count	%	Count	%	Count	%	Count	%	Count	%
5. External consistency										
Owner	0	0	3	5	12	20	29	48.3	16	26.7
Contractor	0	0	4	6.7	8	13.3	39	65	9	15
Consultant	1	1.7	4	6.7	23	38.3	31	51.7	1	1.7
All	1	0.6	11	6.1	43	23.9	99	55	26	14.4
6. Practicality										
Owner	0	0	6	10	16	26.7	32	53.3	6	10
Contractor	2	3.3	2	3.3	24	40	28	46.7	4	6.7
Consultant	1	1.7	3	5	21	35	32	53.3	3	5
All	3	1.7	11	6.1	61	33.9	92	51.1	13	7.2
7. Fairness										
Owner	2	3.3	9	15	10	16.7	31	51.7	8	13.3
Contractor	10	16.7	17	28.3	13	21.7	11	18.3	9	15
Consultant	4	6.7	7	11.7	24	40	22	36.7	3	5
All	16	8.9	33	18.3	47	26.1	64	35.6	20	11.1
8. Effect on quality										
Owner	1	1.7	4	6.7	12	20	32	53.3	11	18.3
Contractor	1	1.7	2	3.3	16	26.7	29	48.3	12	20
Consultant	1	1.7	2	3.3	14	23.3	38	63.3	5	8.3
All	3	1.7	8	4.4	42	23.3	99	55	28	15.6
9. Effect on schedule										
Owner	2	3.3	4	6.7	15	25	27	45	12	20
Contractor	1	1.7	6	10	13	21.7	28	46.7	12	20
Consultant	2	3.3	3	5	17	28.3	33	55	5	8.3
All	5	2.8	13	7.2	45	25	88	48.9	29	16.1
10. Effect on cost										
Owner	2	3.3	3	5	16	26.7	28	46.7	11	18.3
Contractor	0	0	4	6.7	18	30	29	48.3	9	15
Consultant	4	6.7	3	5	16	26.7	34	56.7	3	5
All	6	3.3	10	5.6	50	27.8	91	50.6	23	12.8
11. Effect on safety										
Owner	1	1.7	5	8.3	11	18.3	32	53.3	11	18.3
Contractor	1	1.7	5	8.3	9	15	31	51.7	14	23.3
Consultant	1	1.7	4	6.7	7	11.7	37	61.7	11	18.3
All	3	1.7	14	7.8	27	15	100	55.6	36	20

The average value and standard deviation results of each respondents group's levels of agreement with the evaluation attributes as they relate to the contract are displayed in Table 6. The lower and upper bounds of the 95% confidence interval of corresponding population means are shown in Table 7.

Table 6. Summary of sample results: Levels of agreement

Attributes	Owner		Contractor		Consultant	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Clarity	7.93	1.38	7.37	1.79	7.33	1.46
Conciseness	7.27	1.80	6.83	1.99	7.30	1.51
Completeness	6.63	1.97	6.67	1.90	6.47	1.82
Internal consistency	7.63	1.50	7.07	1.71	6.77	1.52
External consistency	7.93	1.65	7.76	1.48	6.90	1.45
Practicality	7.27	1.60	7.00	1.63	7.10	1.49
Fairness	7.13	2.03	5.73	2.64	6.43	1.92
Effect on quality	7.60	1.76	7.63	1.71	7.47	1.47
Effect on schedule	7.43	1.95	7.47	1.91	7.20	1.70
Effect on cost	7.43	1.88	7.43	1.61	6.97	1.86
Effect on safety	7.57	1.81	7.73	1.86	7.77	1.69

Extent of agreement is measured on a five-level Likert scale where strongly disagree = 2 disagree = 4 neutral = 6 agree = 8 and strongly agree = 10.

Table 7. Summary of results: Confidence intervals of agreement levels

Attributes	Owner		Contractor		Consultant	
	95% Confidence interval		95% Confidence interval		95% Confidence interval	
	Lower	Upper	Lower	Upper	Lower	Upper
Clarity	7.58	8.29	6.91	7.83	6.96	7.71
Conciseness	6.80	7.73	6.32	7.35	6.91	7.69
Completeness	6.13	7.14	6.18	7.16	6.00	6.94
Internal consistency	7.25	8.02	6.63	7.51	6.37	7.16
External consistency	7.51	8.36	7.39	8.15	6.53	7.27
Practicality	6.85	7.68	6.58	7.42	6.72	7.49
Fairness	6.61	7.66	5.05	6.42	5.94	6.93
Effect on quality	7.15	8.05	7.19	8.07	7.09	7.85
Effect on schedule	6.93	7.94	6.97	7.96	6.76	7.64
Effect on cost	6.95	7.92	7.02	7.85	6.49	7.45
Effect on safety	7.10	8.03	7.25	8.21	7.33	8.20

Two observations are of particular interest. First, on average respondents barely agree that the contract attains the evaluation attributes. Virtually all means of levels of agreement are greater than 6 (neutral) and less than 8 (agree), with the owners' tend to be higher than those of contractors, who in turn tend to agree more than the consultants. Or as it has been sometimes used, see for instance [6], the means can be more specifically interpreted in relation to an interval scale such as that constructed in Fig. 2.

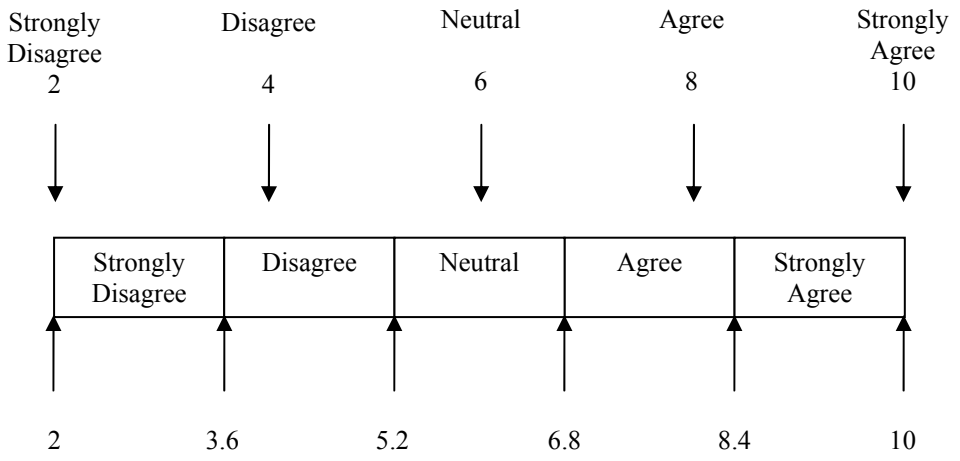

Fig. 2. Intervals of mean levels of agreement.

The second key observation is that the completeness and fairness attributes consistently ranked the least; they had the lowest mean levels of agreement within all the three categories of respondents. Percentage wise, less than 50% of respondents (47% of owner, 45% of contractor, and 45% of consultant) agreed with the contract's completeness, whereas 65% owner, 33% contractor, and 42% consultant respondents agreed with its fairness (see Table 5). Thus, while respondents closely agree on the completeness attribute, they rather disagree over the fairness aspect. It is worth noting that this sharp disagreement between owner and contractor groups can translate into excessive contingencies by the latter. This may partially explain a widely held belief that construction bids in Saudi Arabia are often quite high. It may also partly explain why those bids tend to be widely spread.

The Chi-Square (χ^2) test in conjunction with contingency tables was used to determine whether the levels of agreement with each evaluation attribute are similar for owners, contractors and consultants. Table 8 provides the SPSS output for the fairness attribute. Using an χ^2-test at a 95% confidence level indicates that there are no significant differences among the three parties in levels of agreement, as exemplified by Table 8, except in the cases of the clarity, external consistency, and fairness. For each of the latter attributes, *p*-value is less than 0.05, signifying its level of agreement differs among at least two of the three parties.

Table 8. Contingency table with Chi-Square comparing fairness' level of agreement across the parties (SPSS output)

Party * Fairness Crosstabulation

			Fairness				
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Party	Owner	Count	2	9	10	31	8
		% within Party	3.3%	15.0%	16.7%	51.7%	13.3%
	Contractor	Count	10	17	13	11	9
		% within Party	16.7%	28.3%	21.7%	18.3%	15.0%
	Consultant	Count	4	7	24	22	3
		% within Party	6.7%	11.7%	40.0%	36.7%	5.0%
Total		Count	16	33	47	64	20
		% within Party	8.9%	18.3%	26.1%	35.6%	11.1%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	31.033[a]	8	.000
Likelihood Ratio	31.331	8	.000
Linear-by-Linear Association	2.829	1	.093
N of Valid Cases	180		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.33.

Although contingency tables are the most appropriate for the analysis of count or classificatory data [11], such as party-agreement extent classifications here, it is known that small cell counts may make the results of the χ^2-test less valid [11]. A rule of thump in this respect is that the test should not be used when any expected count is less than 1 or when more than 20% of the expected counts are smaller than 5 [10]. SPSS prints the number and percentage of such cells, see for instance the software generated footnote in Table 8. Since most of the attributes did not obey these minimum thresholds, the results of the analysis of contingency tables may be less than reliable. For this reason, this part of the samples data was reanalyzed using Kruskal-Wallis test. This is the non-parametric counterpart of ANOVA, though less powerful, is particularly useful statistical technique [11]. Using this test at 95% confidence level essentially led to the same conclusions as the preceding one, as for instance exemplified by comparison of the outputs in Tables 8 and 9.

Table 9. Kruskal-Wallis test comparing fairness' level of agreement between parties (SPSS output)

Ranks

	Party	N	Mean Rank
Fairness	Owner	60	106.53
	Contractor	60	75.72
	Consultant	60	89.26
	Total	180	

Test Statistics[a,b]

	Fairness
Chi-Square	11.344
df	2
Asymp. Sig.	.003

a. Kruskal Wallis Test

b. Grouping Variable: Party

Total evaluation of the contract

The *TES* for each class of respondents was computed using formula (1), based on the average value results in Tables 2 and 6. They are 74.23, 71.86 and 70.67 for owners, contractors and consultants, respectively. The differences among the scores reflect a tendency revealed by the results of this study, i.e. higher proportions of owners tend to agree more with almost all of the attributes than contractors or consultants. Nonetheless, the differences are relatively small and an overall *TES* of 72.27 was computed to reveal all respondents' perceptions of the contract. Note that these scores are on the 20-100 scale of Fig. 1 and can be interpreted in relation to it. As depicted in the figure, 60 is the neutral point of the scale, a score below 60 should be viewed as a negative evaluation whereas a score above 60 should be viewed as a positive evaluation, and the farther the score is from 60, the stronger is the positivity or negativity magnitude [8]. Since the calculated TES_s are very close, the magnitude of the positivity of the overall total evaluation score is

$$TES_{overall} = (72.27 - 60) / (100 - 60) = 30\%$$

It is evident from the remaining 70% positivity balance that there is a need to significantly improve the contract. Alternatively, one can convert $TES_{overall}$ to its equivalent on the common 0-100 evaluation scale using relationship not unlike that being used for transformations between interval Fahrenheit and Celsius temperature scales. Hence,

$$TES_{\text{equivalent}} / 100 = (TES_{\text{overall}} - 20) / (100 - 20)$$

$$TES_{\text{equivalent}} = 100 * (72.27 - 20) / (100 - 20) = 65$$

With 60 the typical cutoff point of this scale, this would indicate that the contract is barely adequate. In summary, the figures reveal a view, shared by all categories of respondents; namely, that the contract attains only slight positive evaluation. Thus, it would appear that there is considerable dissatisfaction with the contract.

Engineer's role in the contract

Part four of the questionnaire sought a general insight into the role played by the engineer in administration of the contract. It consists of two questions in the form of ordinal statements. One required respondents to indicate their view on the extent of the role's sufficiency, whereas the other sought to obtain their perceptions of the extent of the role's efficacy. Their responses are summarized in Tables 10 and 11. The figures suggest that most of the respondents are of the opinion that the engineer's role in the contract is sufficient and effective. However, the evidence in the samples was not sufficient to support the alternative hypothesis that owners, contractors and consultants generally do not agree on the sufficiency or efficacy of the engineer's role in the contract. The null hypothesis was not rejected in either case, i.e. the χ^2-test results are not statistically significant, especially with respect to the role's efficacy, at 5% level of significance.

This failure of the tests to reject the null hypotheses, it should be noted, is stated to carefully avoid concluding that the null hypothesis in each of the two cases is true (that the parties agree), for by stating so one would be risking an error, the so called *Type II error*. Acceptance of the null hypothesis, though common in much of current practice, e.g. [10], is a dangerous business and endeavor for the unwary. This is why some scientific writings on decisions and consequences of hypothesis testing, e.g. [11], when a test of a hypothesis fails reserve judgment about which hypothesis is true. They carefully avoid stating that the null hypothesis is true through using a cliché not unlike that being used above in relation to the hypothesis concerning the sufficiency or efficacy of the role. From cursory comparative evaluation of the engineer's double-role in construction contracts as spelled out, for instance, in the standard AIA Document A201: *General conditions of the Contract for construction* and the FIDIC: *Conditions of Contract for Works f Civil Engineering Construction* and that of the Saudi contract and given that what was sought about the role is general insight, the writer believes it is prudent to withhold judgment and to state the results as above. In any case, it is the more scientific thing to do as explained.

Summary and Conclusions

A survey of owners, contractors and consultants regarding the evaluation of the Saudi standard contract for public works was conducted. The survey is based upon previously devised instrument consisting of 11 evaluation attributes along with their operational

Table 10. Perceptions of the sufficiency of the engineer's role in the contract (SPSS output)

Party * Sufficiency of Engineer's Role Crosstabulation

			Sufficiency of Engineer's Role			
			Not sufficient	Sufficient to certain extent	Sufficient to large extent	Total
Party	Owner	Count	10	43	7	60
		% within Party	16.7%	71.7%	11.7%	100.0%
	Contractor	Count	3	43	14	60
		% within Party	5.0%	71.7%	23.3%	100.0%
	Consultant	Count	6	36	18	60
		% within Party	10.0%	60.0%	30.0%	100.0%
Total		Count	19	122	39	180
		% within Party	10.6%	67.8%	21.7%	100.0%

Table 11. Perceptions of the efficacy of the engineer's role in the contract (SPSS output)

Party * Efficacy of Engineer's Role Crosstabulation

			Efficacy of Engineer's Role			
			Not effective	Effective to some extent	Effective to large extent	Total
Party	Owner	Count	11	35	14	60
		% within Party	18.3%	58.3%	23.3%	100.0%
	Contractor	Count	4	37	19	60
		% within Party	6.7%	61.7%	31.7%	100.0%
	Consultant	Count	4	37	19	60
		% within Party	6.7%	61.7%	31.7%	100.0%
Total		Count	19	109	52	180
		% within Party	10.6%	60.6%	28.9%	100.0%

definitions. The results of the survey have revealed the following:

- There are no great disparities among the three contracting parties with regard to relative importance of contract evaluation attributes except in the case of external consistency, where consultants tend to differ with both owners and contractors.
- There are no significant differences among the three parties in levels of agreement with the evaluation attributes as they relate to the contract, except in the cases of the clarity, external consistency, and fairness attributes. The most divergent views are between owners and contractors over the fairness of the contract. Almost two-thirds of owner respondents reported that the contract is fair, whereas only one-third of contractor respondents agreed.
- The completeness and fairness attributes of the contract consistently had the lowest

extents of agreement within all the three categories of respondents.

- Overall, the contract is hardly positive as evaluated by the three different contracting party groups. It would appear that there is considerable dissatisfaction with the contract.
- Most of the respondents are of the opinion that the role played by the engineer in administering the contract is sufficient and effective. The samples do not provide sufficient evidence to conclude that there are differences in the larger owner, contractor, and consultant populations in regard these aspects.

These findings should not be a surprise for the discontent with the contract has been voiced especially by contractors for some time. The insight gained through this study is the extent of that discontent. It would therefore appear that a systematic approach to the analysis and design of the contract is needed. Two types of approaches are possible to accomplish this task: one is evolutionary and the other is revolutionary. It is suggested that a concerted effort be undertaken by a joint committee, composed of representatives of the concerned construction parties, to evolve the contract towards higher *TES*. This can be better achieved in light of long well-established worldwide standard forms of construction contracts such as those of the Canadian Construction Documents Committee (CCDC), British Joint Contracts Tribunal (JCT) and Institute of Civil Engineers (ICE), American Institute of Architects (AIA) and Engineers Joint Contract Documents Committee (EJCDC), and International Federation of Consulting Engineers (FIDIC).

The alternative and revolutionary approach hinges on the recent trend away from the traditional dual role of the engineer toward that embodied by the New Engineering Contract (NEC) family of standard contracts. The first approach is clearly a feasible strategy for research work with a relatively short-to-medium outlook. In the long run, this latter approach is likely to be more worthwhile. In either case, a great deal of accumulated knowledge and experience can be gained from comparisons with standard contracts from the industrial countries.

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تقييم العقد السعودي الموحد للأشغال العامة

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(قدِّم للنشر في ٢٠٠٥/٠٢/٠٥م، وقبل للنشر في ٢٠٠٦/٠١/٠٣م)

ملخص البحث. إن عقد الأشغال العامة الموحد هو وثيقة عقد التشييد الوطنية الوحيدة من نوعها في المملكة العربية السعودية. بالرغم من مرور ما يقارب ٢٠ عاماً منذ اعتماده، شمول التجربة المتراكمة من استعماله الواسع في مختلف مشاريع الأشغال العامة، استخدامه كواحد يحل عوضاً عن أي من أنواع عقود التشييد المختلفة، وبعض الإصرار في الزعم بالأخص من جانب المقاولين بأنه يفتقر إلى التوازن؛ القليل من البحث العلمي تم بشأن تقييمه. تقدم هذه الورقة النتائج التي تم الحصول عليها من مسح ميداني لعينة من مهندسين يعملون مع الأطراف الرئيسية الثلاثة المتعاقدة في عملية التشييد، وذلك بسؤالهم عن مرئياتهم بشأن العقد بناءً على ١١ معيار تقييم. بينت نتائج هذه الدراسة أن العقد الموحد بالكاد كافي، مما يثير الإهتمام بشأن كفاءته وفعاليته في إنجاز المشاريع. على إعتبار حقيقة أن فهم العقود أساسي بالنسبة لإدارة التشييد، فإنه من المؤمل أن وجهات النظر المستكشفة من خلال هذا البحث سوف تكون فاعلة في تطوير صناعة التشييد السعودية.