



ASSESSMENT OF CONTRACTORS' PRACTICES TOWARDS RISKS OUT OF CONTRACTORS CONTROL IN CONSTRUCTION INDUSTRY

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Research has shown that public construction projects in Saudi Arabia have exhibited poor performance for the past three decades. Recent studies have identified the ownership of parties who cause risks and lead to low performance in the Saudi construction industry. These studies identified that contractors are not the main party that cause risks as owners, consultants, and other parties have the major share of causing risks in the industry. The aim of this study is to assess the current risk management and performance measurement practices applied by contractors to minimize risk out of their control (caused by other parties) through conducting a questionnaire survey. The questionnaire survey was sent to contractors who work in public construction projects in Saudi Arabia. The assessment included the contractors' practices in the identification of projects activities and risks, contractors' practices in mitigating other parties' activities and risks, and contractors' practices in measuring the performance of all project parties. The study identified that contractors' current risk management and performance measurement practices are not effective in minimizing projects risks caused by other parties and ineffective in measuring performance of all parties. The study recommends a proactive risk management approach that can help contractors to minimize risks caused by other parties and can measure the performance of all parties in projects.

Keywords: Risk management, Performance measurement, Risk mitigation, Project parties, Risk identification, Accountability.

1 INTRODUCTION

Several studies conducted in Saudi Arabia through the past three decades indicated the critical issue of the construction industry with inefficiencies, non-performance, cost and time overruns. Delay is regarded as one of the most serious and common issues in the Saudi construction projects (Faridi and El-Sayegh 2006). It was revealed by three researchers in Saudi that between 60-70% of the public construction projects faced delays in the completion of projects' time (Al-Sultan 1989, Al-Khalil and Al-Ghafly 1999, Assaf and Al-Hejji 2006). One study reported that the average time overrun percentages varied from the original duration of contracts by 10% to 30% (Assaf and Al-Hejji 2006). Another study found that the average time overrun percentage in projects was 39% from their predicted original schedules (Elawi *et al.* 2016). Additionally, in the

Saudi construction industry (SCI), several researchers have studied the prevailing issue of cost overruns (Alhomidan 2013, Allahaim and Liu 2015, Alghonamy 2015). The above projects cost overruns and delays are results and measures of risk occurrence that cause a low performing construction.

Several parties are involved in construction projects such as owner, designer, consultant, contractor, suppliers, and other stakeholders and all of project parties inevitably carry certain risks (Peckiene *et al.*, 2013). In the context of the SCI, three authors identified risks in the industry and categorized the risks considering the responsible parties of generating these risks. Assaf and Al-Hejji (2006) identified and assessed delay risks in the SCI. The study conclusion showed that the most common delay risk is change orders by owners. The final combination of results showed that project delays are mostly created by owners, followed by contractors, designers, labors and consultants. Another study assessed risks in the aviation construction projects in Saudi Arabia (Baghdadi and Kishk 2017). This research identified that the most important group of risks affecting projects is designer related risks such as design errors. The owners related risks such as design changes were ranked second followed by consultant related risks and then contractor related risks. The third study identified the ownership percentages of parties causing risks in the SCI (Elawi *et al.*, 2016). This study identified that project owners caused 53% of the risks. Other stakeholders (excluding owners and contractors) were responsible for 20% of the risks. In addition, Algahtany *et al.*, (2016) analyzed 19 studies that identified and assessed risks in the SCI and identified that risks out of contractor's control (caused by other parties) such as change of scope, change orders, specifications changes, design changes by owner or consultant, and mistakes in design are frequent risks in the SCI. In traditional practices in managing risks in the SCI, most of the risks are allocated to contractors (Al-Salman 2004), as other project parties do not take accountability of their risks (Al-Sobiei *et al.*, 2005). However, in the literature discussed above, owners and project parties other than contractors cause the major share of risks in SCI. Albogamy and Dawood (2015) found that there is a clear lack of risk management practices in Saudi Arabia, which identify the impact of the risks for project parties in construction process. In addition, Alsulamy (2015) identified that public organizations in Saudi Arabia suffer from the absence of performance measurement systems in their construction projects that identify performance of projects and differentiate between project parties' performances. According to Kashiwagi (2016) the responsibility for projects' risks should be identified and measured during project phases to identify the project parties' impact on project risks and to differentiate the actual performance of project parties.

2 OBJECTIVE OF THE STUDY

The literature discussed above showed that project parties other than contractors cause the major share of risks, which lead to low performance in the SCI. The main aim of the study is to assess the current practices applied by contractors to minimize risks out of their control (caused by other parties) by evaluating the contractors' current risk mitigation and performance measurement practices. The assessment includes the contractors' practices in the identification of projects activities and risks, contractors' practices in mitigating other parties' activities and risks, and contractors' practices in measuring the performance of all project parties.

3 RESEARCH METHODOLOGY

The aim of the study will be achieved through conducting a questionnaire survey to contractors who work in public projects in Saudi Arabia. The first part of the survey assesses

the contractors' current practices towards risks out of their control by evaluating the contractors' current risk mitigation and performance measurement practices. The second part of the survey identifies the contractors' perceptions towards the effectiveness of their current risk mitigation practices and the need for a new approach in mitigating and measuring all parties' activities and risks.

3.1 Data Analysis and Results

The targeted population in this study is contractors who work in public projects in Saudi Arabia. 252 contractors responded to the survey. The survey was formed in English, translated into Arabic, and then distributed through online survey. Of the 252 respondents, 29 contractors are classified in grade 1 in the contractors' classification system in Saudi Arabia. 28 classified in grade 2. Most of the participated contractors are classified in grades 3 and 4 with 72 in grade 3 and 76 in grade 4, 44 contractors in grade 5, and 3 non-classified contractors. The contractors' classification system is used by public organizations in Saudi as the basis for prequalifying contractors and awarding projects to ensure contractors' capabilities and performance (Bubshait and Al-Gobali, 1996). The Saudi contractors' classification system utilizes specific financial and technical criteria to classify contractors and functions within 5 grades and 29 fields and the grades levels determine the financial values of projects budgets that contractors can bid for within their fields of classification (MOMRA, 2017). A total of 103 respondents (41%) have more than 15 years of experience in the construction industry. 26% in the group of 10-15 years of experience, 28% have from 5 to 10 years of experience, and 5% have less than 5 years of experience. Considering the participants' academic qualifications, 84% of the participants have bachelor's degree as their minimum level of education, with 14% holding master's degree, and 5% holds PhD degrees. Considering the participants' working position at the company, the majority were the companies' owners (59%), 16% are projects managers, 5% are field engineers, 13% are administration managers, and 7% choose the final choice (others).

The survey questions were divided into two parts. The first part asks about the contractors' current practices in mitigating and measuring risks and activities of project parties. For this part the respondents were required to select one of three choices that reveal their agreement about each statement. The three choices are agree, don't know, and disagree. The second part of the survey asks about the contractors' perceptions towards the effectiveness of current risk mitigation practices. For this part the respondents were required to select one of five choices that reveal their agreement about each statement. The five choices are strongly agree, agree, not sure, disagree, and strongly disagree.

3.1.1 *Assessment of contractors' practices towards risks out of their control*

The contractors' practices in the identification of projects activities and risks are shown in Figure 1. The majority of the respondents (82.54%) agreed that at early stages of projects, they as contractors identify all of their activities and risks. In addition, Figure 1, shows the approach of the contractors in the identification of activities and risks of other parties in early stages of projects as 56.35% of the participants agreed that they as a contractor identify all of other parties' activities and risks. However, 29.76% of the respondents disagreed with the statement, as they don't identify other parties' activities and risks in projects.

Figure 2, shows the analysis of the contractors' practices in including other parties activities and risks in project plans and mitigating these activities and risks throughout project phases. Only 22.22% of the participated contractors include other parties activities and risks in project plans. Furthermore, the contractors' current risk management practices were investigated,

considering the mitigation of other parties' activities and risks throughout the project phases by the contractors. As shown in Figure 2, 65.08% of the contractors do not mitigate other parties' activities and risks throughout the projects phases and only 15.48% of the respondents mitigate other parties' activities and risks in the project phases.

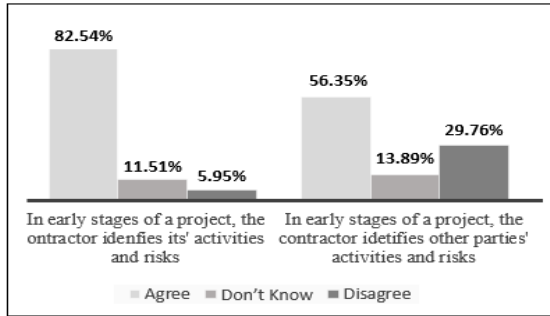


Figure 1. Contractors' practices in the identification of Projects' activities and risks.

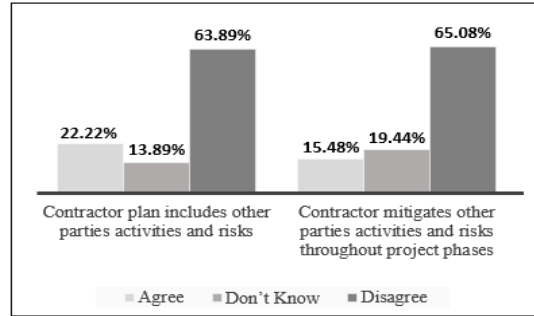


Figure 2. Contractors' practices in mitigating other parties' activities and risks.

The performance measurement practices for the participated contractors were investigated considering measuring their own performance and measuring other parties' performance during the project phases. As shown in Figure 3, most of the participated contractors (84.92%) measure and track their performance during projects phases based on time and cost deviations. However, their measurement practices considering other parties change as only 40.08% measure the performance of all parties in projects during projects phases and 43.65% do not measure the performance of all parties during project phases. A following question was asked for the participated contractors who measure all parties' performance to investigate if they share the measurement information of all parties' performance periodically with all parties involved in projects. Only 31% of those contractors share the measurement information with project parties.

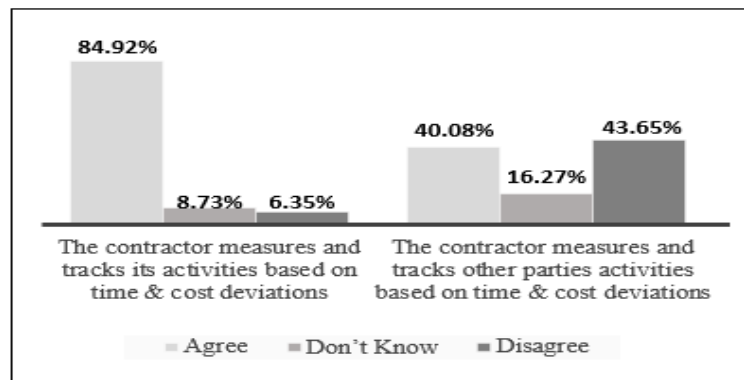


Figure 3. Contractors' practices in measuring activities performance.

3.1.2 Contractors' perceptions of the current risk mitigation practices

This section identifies the contractors' perceptions towards the effectiveness of the current risk mitigation practices applied by contractors and the need for a new approach in mitigating and measuring all parties' activities and risks. Table 1 provides the results of the descriptive statistics

of the contractors' answers. The answers' scale ranges from 5 for strongly agree to 1 for strongly disagree. The table shows the analysis of sample response using the concept of weighted mean and standard deviation.

Table 1. Contractors' perceptions of the current risk mitigation practices

#	Question	%					Mean	Sd
		Strongly agree	Agree	Not sure	Disagree	Strongly disagree		
1	Activities of other parties in projects (activities out of contractor's control) are risks to the project if they are not done as expected.	46.43	44.84	5.95	1.98	0.79	4.34	0.75
2	Risks and activities that are out of contractor's control (generated by other parties) are a leading cause of low performance in projects in Saudi Arabia.	39.29	45.63	5.16	8.33	1.59	4.13	0.95
3	The contractors' current risk mitigation practices are not effective in minimizing risks because they do not identify and mitigate risks and activates of other parties (out of contractors control) in projects in Saudi Arabia.	37.30	46.43	9.92	5.16	1.19	4.13	0.88
4	There is a need for a proactive risk mitigation practice that identifies and mitigates activates and risks out of contractors control in projects in Saudi Arabia.	49.60	40.87	7.14	1.98	0.40	4.37	0.74
5	There is a need for a performance measurement system that identifies all parties' performance in projects to differentiate the actual contractors' performance from others' risks and performance.	54.37	37.30	6.35	1.19	0.79	4.43	0.73

4 CONCLUSIONS

The analysis of the collected data revealed the status of the current approach of mitigating risks applied by contractors in the SCI. The study results assured that the activities of projects parties other than contractors should be dealt with as risks as activities and risks out of contractors control are a leading cause of low performance in projects in Saudi Arabia. However, after the analysis of the contractors' current approach in mitigating these risks, results showed that most of the contractors do not include the risks and activities out of their control in projects plans and do not mitigate them throughout project phases. Furthermore, considerable percentage of contractors does not measure activities deviations and risks' effects of all parties in projects and thereby contractors are not able to differentiate their performance from the actual performance of other project parties. Transparency is not utilized by most of the contractors to minimize risks effects, as they do not share the measurement information periodically with all parties in projects.

The study results showed that the contractors' current risk mitigation practices are not effective in minimizing risks because they do not identify and mitigate risks and activates of other parties in projects. According to the majority of the participated contractors, there is a need for a proactive risk mitigation practice that identifies and mitigates activates and risks out of contractors control. Furthermore, there is a need for performance measurement system that

identifies all parties' performance in projects to differentiate the actual contractors' performance from others' risks and performance. These results show the need to shift the focus of contractors' risk management and performance measurement practices from only managing and measuring their own activities and risks to be proactive by including all project parties' activities and risks.

Authors propose that this paradigm shift will increase project parties' accountability towards their activities and risks and lead to minimizing project risks. Project parties' accountability increases when their activities and risks are mitigated continuously by contractors with measuring the activities and risks' deviations from the planned schedule and cost with identifying sources of deviations. Transparency should be utilized in this approach through sharing performance measurements of project activities and risks with all project parties. This will differentiate the performance of each party by identifying the responsibility of causing risks or causing deviations in project planned schedule and budget.

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