

Additional Criteria to Maximize the Performance of the Procurement System Delivery Method in Saudi Arabia

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The current Saudi Arabia (SA) procurement system leads to many losses in money and benefits in projects. The estimated percentage of delayed projects in SA during the past decades is more than 70% of the total projects. A questionnaire has been developed and carefully designed to improve the current SA procurement system. The questionnaire was sent out to 1,396 participants, the SA Council for professional engineers, who work in both private and public sectors. The participants are interested in the SA procurement and contracts system with experience ranging from one to more than twenty-five years in common construction sectors. Most of the participants from both private and public sectors agreed with the survey statements regarding zone price proposals, contractors' evaluation, risks, planning, projects' scope, owners concern and weekly risks reports (WRR). Based on the survey, a model, called SVIE procurement system, has been developed in which the most expert contractor is chosen through four phases: submittals & education, vendor selection, illustration, and execution. The resulting model is easy to implement by SA government and does not require special skills or a background.

Keywords: Saudi Arabia, Procurement, construction delays, government, case study.

Introduction

The Kingdom of SA has had a major change in its construction industry in recent decades. This growth came from the continued economic development of SA (Kacst, 2011). Also, the country has received one of the largest and most important construction industry markets in the Middle East region. This country is going to lead much of the expansion in the region in coming years (World Construction, 2012). It has been discovered that seventy percent (70%) of the total delays in the projects run by the Ministry of Housing and Public Works in SA were delayed (Zain Al-Abedien, 1983). Al-Sultan (1987) has received a similar percentage of project delays and found that seventy percent (70%) of the government projects had time-overrun issues. Al-Ghafly (1995) has done a survey to define the frequency and degree of construction projects delays by collecting data through the projects' parties such as owners, contractors and consultants. The contractors think that around thirty-seven percent (37%) of the projects suffered from delays, and consultants think that eighty-four percent (84%) of the projects had some delays. The time overrun is approximately thirty-nine percent (39%) over the project's time Al-Ghafly (1995).

Assaf and Al-Hejji, (2006) have measured the project's performance in SA. The projects suffer from delays, and the percentage of delays is 10%-30% of the original scheduling time. Al Turkey (2011) conducted a questionnaire surveying around 300 project managers who work at different sectors. The questionnaire objective was to address the implementation issues that are related to

ventures is SA. Some of the results found that eighty percent (80%) of the ventures were subject to overrun costs, and ninety- seven percent (97%) did not follow the original scheduling time. Another study has been conducted to find the reasons that cause delays in projects and identified 63 factors that have impacts on projects and classified them to four different categories based on the source. One of the most important results found were that the most factors affecting a project negatively was from the clients (Albogamy et al., 2012). A study conducted a survey in SA to identify the factors that cause delays on projects and found that the most important factor related to clients is the lack of finance to complete projects, clients' inability to pay contractors as well as payments delays (A. Al-kharashi and M. Skitmore, 2008).

The procurement system is a key factor linked to project performance. Alofi (2015) analyzed the current SA procurement system. The current system consists of three main sections: the public competition, direct and special purchases. Most of the purchases go through the public competition. The existing system awards to the contractor or vendor who has the lowest price among the contenders. The awarded vendor's price should be within market prices and not less than 35% of the current market prices.

Various studies have attempted to improve methods of procurement to address the issue of non-performance. T. Alhazmi and R. McCaffer (2000), in general, have found some difficulties in most of these studies that provide models for procurement systems as the following:

- There are several significant factors in the selection phase that did not consider all procurement systems.
- Owners cannot use some procurement systems because they are difficult to implement
- Some of them require advanced mathematical methods that may hinder the use by the owners.
- Some of the models are primitive in the selection phase and have lack of standards in some options.
- There are few options in the model numbers in the database.

One of the most documented procurement models to deliver high performance is the Performance Information Procurement System (PIPS). In 1994, Dr. Dean Kashiwagi founded PIPS and has been the director of the Performance Based Studies Research Group (PBSRG). The PIPS has been tested by PBSRG's researchers over 1,750 times in 31 states and 7 countries around the world with around 98% of clients' satisfaction. It has been tested with project costs up to \$6.3 billion (\$2.2 billion in non-construction projects and \$4.1 billion in construction projects). The PIPS consist of three phases (Selection, Clarification and Execution) to ensure that the vendors or contractors are qualified to take future projects with success. The concept of PIPS is to reduce direct management and control that have been used by owners over vendors or contractors.

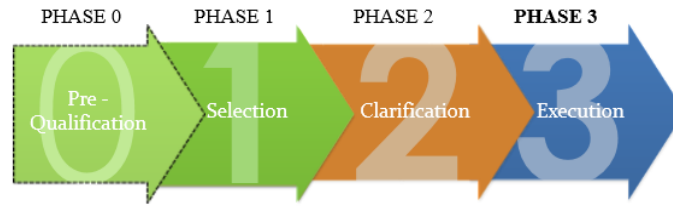


Figure 1: PIPS Phases (Adapted from Kashiwagi, 2014).

Problem

The Saudi procurement system is the one of the most important issues that has negative effects on the construction industry in the Kingdom of SA. The negative effects are a result of the contractors who have been selected through the procurement system who are not qualified (Assaf and Al-Hejji, 2006). A. Al-kharashi and M. Skitmore (2009) conducted a survey through 86 participants to find out the reasons for delay in government projects in SA and found that one of the most important reasons is the lack of qualified personnel. In addition, the biggest problem in the Saudi procurement system is the selection of contractors' basis on lowest price (Albogamy et al., 2012).

Proposal

This paper proposes an overall development of the SA procurement and contracts system to counter the delays and money losses in projects. The method proposes conducting a survey of many professional engineers to get an opinion on the current Saudi procurement system (1,396 participants).

The research paper has several objectives, as follows:

- To conduct a survey of many professional engineers who have an interest with the SA procurement system and licensed under the Saudi council of engineers to develop the current procurement system.
- To add two different effective phases to increase the performance of the current Saudi procurement system.
- Also, this paper has proposed a solution for the issues of delayed projects in SA.

Methodology

- Identify the issues in SA traditional delivery method by surveying proper literature.
- Review PIPS delivery method and the traditional SA procurement system.
- Identify gaps in the traditional SA procurement system and propose additional criteria from PIPS.
- Conduct a survey among professional participants to identify their perception of the additional criteria for the proposed model.
- Conduct an analysis on the data and compare results between both private and government sectors.

Survey & Design

The survey was designed to develop the SA's current procurement system by taking perceptions of large number of participants who are interested with procurement and contracts system in SA from both public and private sectors. This development is through two essential phases, pre-construction and during construction, and the separation between the two phases is contracts signing. The survey contained seven important questions relating SA's current procurement system and PIPS, zone price proposals, contractors' evaluation, risks, planning, projects' scope, owners concerns and weekly risks reports. The model derived from the answers of the questions can be used to radically change the current Saudi procurement system.

The participants were able to answer the questions by using two different options:

1. Yes; No.
2. I Strongly Agree; I Agree; I Strongly Disagree; I Disagree; I Do Not Know.

Distribution

The author contacted the Saudi council of engineers, an official agency in SA which is responsible to license the foreign and Saudi's engineers to practice in the construction industry to send a survey to professional engineers using the agency access. All the engineers who participated in the survey have an interest in the procurement and contracts system in SA. This survey was sent to engineers who work in the private and government sectors, where both sectors follow the instructions of the current procurement and contracts system in SA. The questionnaire was collected through many participants to collect accurate results for their opinions. Out of 12,683 participants who received the survey, 1,396 professional engineers participated in this survey. The number is constituted of 1,151 participants belonging to the private sectors and 245 from the government sectors. In combination, both sectors included 867 engineers, 256 consultants, 121 contractors, 35 owners and 132 architects and 13 academics. All participants had experience between one year to more than twenty-five years in several different areas in the construction industry.

Results

As seen in Figure 1, regarding the contractors' evaluation, approximately ninety-four percent (93.7%) of the participants who work in the private sectors and around ninety-six percent (96.1%) of them who work in government sectors agreed to evaluate the previous contractors' projects before the contract is signed, to ensure their efficiency for next project. Regarding the risks identification, approximately ninety percent (90.1%) of the participants who work in the private sectors consented that identifying risks before a contract is signed would improve project performance. Alofi (2015) found that around eighty-nine percent (88.7%) who work in governmental sectors think that the project performance improvement will require the contractor to identify risks before a contract is signed as seen in Figure 2.

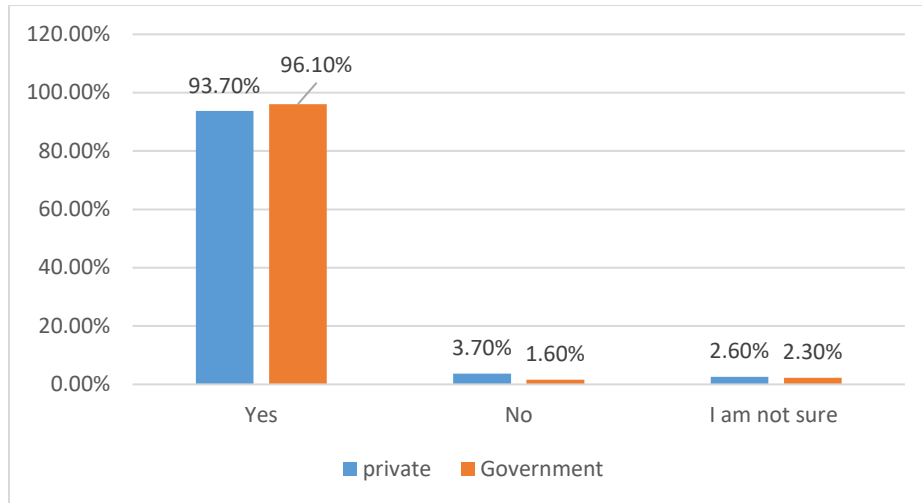


Figure 2: The evaluation of the previous contractors' projects before the contract is signed to ensure efficiency for the next project.

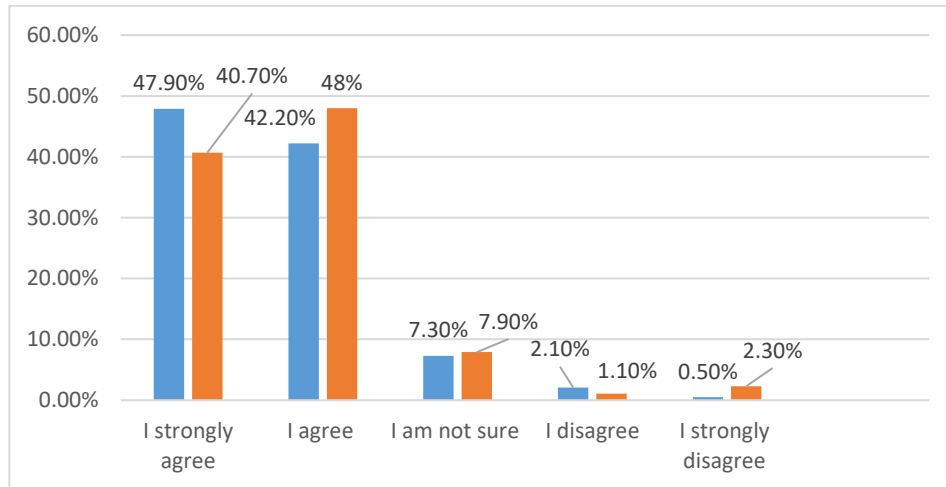


Figure 3: Requiring contractors to identify risks before a contract is signed, would improve project performance.

Figure 3 shows that ninety-six percent (96%) of the participants who work in the private sectors agreed that contractors having plans before a contract is signed improves the performance of the project thus minimizing losses in time and money. Alofi (2015) found that ninety-six percent (96%) from the participants who work in the public sectors agree that before a contract is signed the contractors should have plans to improve the project performance and minimize losses in money and time. Regarding the scope of projects, around ninety-five percent (95%) of the participants who work in private sector think that requiring a contractor to review the scope of projects and verifying that they are correct improves project performance as seen in Figure 4. Alofi (2015) found that around ninety-five percent (95%) of the participants who work in public sectors think that the projects performance will improve by requiring a contractor to review the scope of projects and verify they are correct as seen in Figure 4.

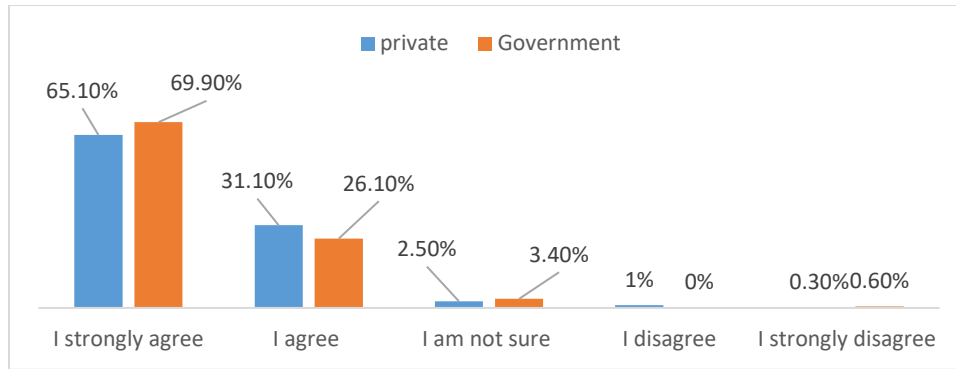


Figure 4: When contractors have a plan before a contract is signed, the performance of the project improves, thus minimizing losses in time and money.

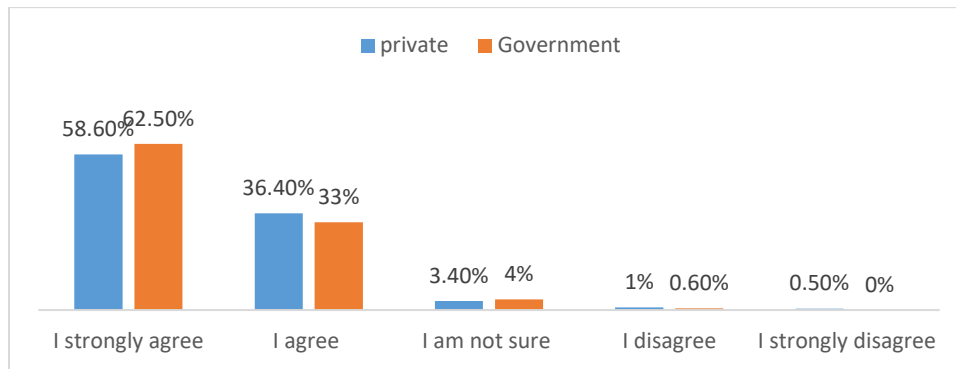


Figure 5: Requiring contractors to review the scope of projects improves projects' performance.

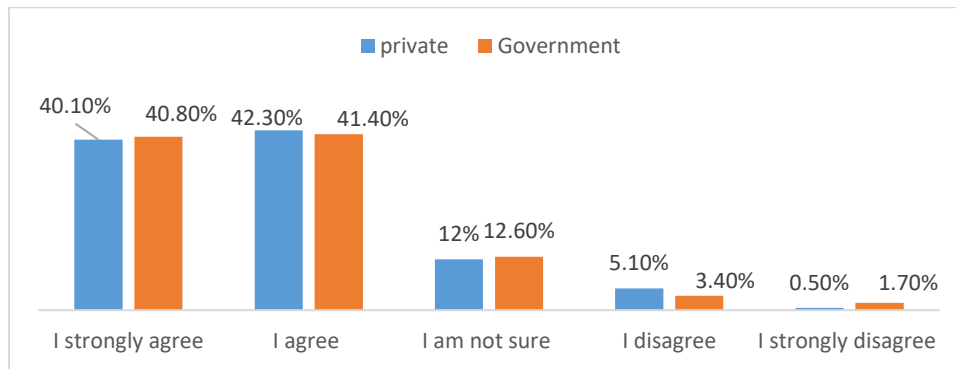


Figure 6: Requiring contractors to resolve all owner concerns before a contract is signed improves projects' performance.

As seen in Figure 5, regarding the owners' concerns, approximately eighty-two percent (82%) of the participants who work in private sectors think that requiring contractors to resolve all owners' concerns before a contract is signed improves project performance. Alofi (2015) found that about eighty-two percent (82%) from the participants who work in public sectors think that the projects performance will improve by requiring contractors to resolve all owners' concerns before a contract is signed as seen in Figure 5. Regarding the weekly risks reports, around ninety percent (89.7%) of the participants who work in the private sectors and approximately ninety-two

percent (92.1%) from the participants who work in the public sectors support using the risks weekly reports to measure and improve projects as seen in the Figure 6.

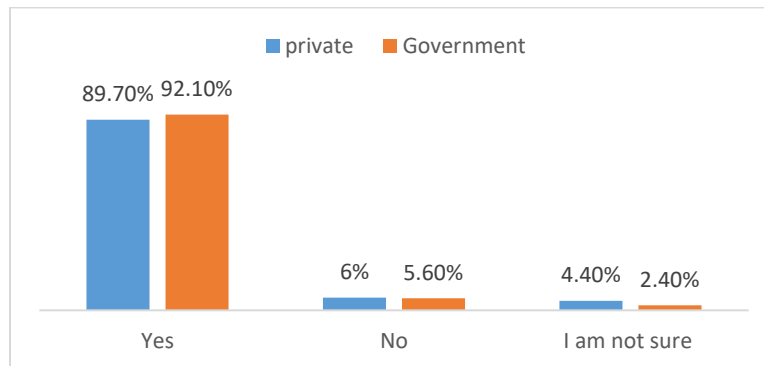


Figure 7: The weekly reports of the risks and tasks at projects would be measured and improve all project tasks.

Survey Analysis

The survey was accurately designed, and the data has been collected through a large number of professionals in SA who are interested in the SA procurement and contractors' system. The results reflect the great interest of the participants, who work in both private and public sectors, in the development of the current procurement system. The results were closely matched between private and public sectors in all statements. The participants who work in the government sectors are more willing to develop the procurement system compared with the participants who work in the private sectors through two statements: contractors' evaluation and weekly risks reports. The difference between the two sectors is about 2.4% in the both statements in favor of the public sector. This reflects many losses to existing projects caused by the current procurement system in terms of contractors' selection and currently existing standards. Also, the participants who work in the public sector believe that the weekly risk reports (WRR) impact the projects positively.

The result was very similar between the participants who work in the both public and private sectors in three statements: contractors' plans, scope of projects and owners' concerns. However, in one statement, the participants from the private sector are more willing than the public sector in terms of requiring the contractor to identify risks before a contract is signed. About ninety percent (90.1%) from the participants who work in the private sectors and around eighty-nine percent (88.7%) from public sector, which means around 2.5% present more another sector.

A New Composite Model to Increase Performance

The new model is called SVIE Procurement system model. The SVIE is based on results from the survey and PIPS, which has been taken by professional engineers in SA and who have a long experience with the Saudi procurement and contracts system. This model is easy to use by owners or general contractors and does not require special skills or a background to implement it. The model consists of four different phases: Pre-Qualification, Selection, Clarification and

Execution. The model allows any contractor or vendor to enter the competition without preconditions as seen in Figure 8.

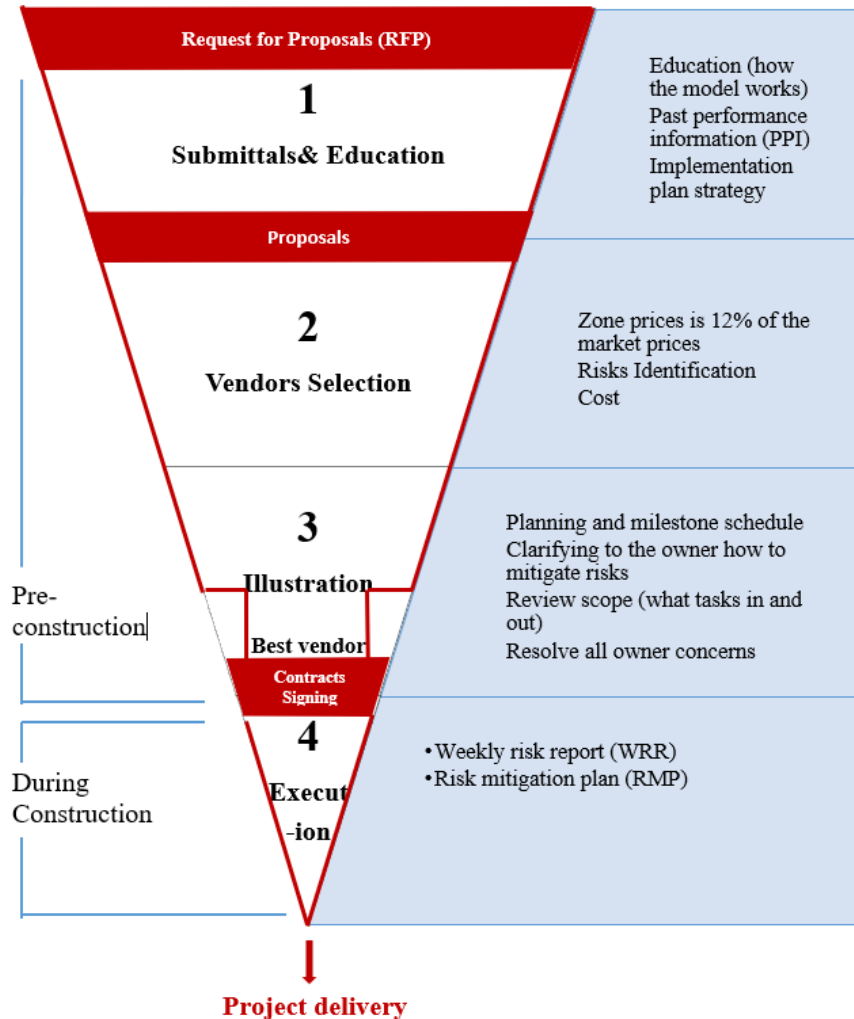


Figure 8: The SVIE Procurement system model is to increase the performance of the Saudi procurement system.

Pre-Qualification

In this phase, contractors or vendors will be trained to know more about how they will be chosen and receive more information about the document submittal process necessary at each phase. This phase is important to overcome many of the questions and observations about the projects. Also, during this phase, the contractors must submit an overall plan strategy, which will be taken in the project and their past performance information (PPI) with references to evaluate them.

Selection

The selection phase focuses on the selection of the contractors or vendors within criteria such as identifying the potential risks of the project, cost and their prices in comparison to the zone prices which is 12% of the market prices. Also, at this phase, contractors will be chosen based on their expertise not only based on cost. The expert contractor or vendor who has been chosen will move to the next phase, the clarification phase.

Illustration

After having been chosen, the contractor or vendor at the selection phase, the winner, moves to the clarification phase, which is the most important phase of the proposed model. In this phase, the contractor or vendor must submit the overall plan for the project and milestone schedules for each phase of the project. Also, the contractor or vendor should have an explanation on how to reduce the potential risks in the project and develop a plan to deal with those risks alongside a scope review with the owner. In the scope discussion, the contractor or vendor should identify all tasks that occur in or out of the framework of the project. In addition, the contractor or seller should, at this phase, find solutions to all the owner's concerns by using the principle of transparency.

Execution

After signing the contract between all parties, the contractor or vendor begins to execute the project and construction work. During this phase, the weekly risk reports (WRR) should be submitted weekly by contractor or vendor to the owner. The WRR shows the risks that happened or will happen to develop plans to deal with those risks when discovered in the project by using RMP.

Conclusions & Recommendations

The current SA procurement system is causing delays and money losses in previous and existing projects. These issues resulted from the contractors' or vendors' selection process. This leads to selecting unqualified contractors or vendors because the system selects them only based on the lowest price without taking any criteria into account. On another side, the researchers trust one of the best procurement systems in the world, which is called PIPS. The PIPS has been tested during last twenty years more than 1700 times with 98% of users' satisfaction. A questionnaire about SA procurement system improvement has been sent out to 1,396 professionals in the Kingdom of SA. The participants are from both the public and private sectors and have a long experience with the Saudi procurement and contracts system. The questionnaire contains several areas to develop and increase the performance of the Saudi procurement system by adding several new phases into the current procurement system. These new phases ensure the efficiency of contractor or vendor who has been selected. Also, the new phases lead to select the most expert contractor or vendor. The expert always increases the project success and reduces losses in time and money.

The questionnaire results are as follows:

- Around 94% of the participants who work in the private sectors and 96% of them who work in government sectors agreed to evaluate the previous contractors' projects before the contract is signed to ensure their efficiency for the next project.
- Approximately 90% of the participants agreed that identifying risks before a contract is signed would improve project performance.
- 96% of the participants who work in the private sectors agreed that contractors having plans before a contract is signed improves the performance of the project, thus minimizing losses in time and money.

- Around 95% of the participants who work in private sector think that requiring contractors to review the scope of projects and verify that they are correct improves project performance.
- 82% of the participants who work in private sectors think that requiring contractors to resolve all owners' concerns before a contract is signed improves project performance.
- Approximately 90% of the participants who work in the private sectors and approximately 92% of the participants who work in the public sectors support WRR to measure and improve projects.

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