
Upgrade the Saudi Arabian Procurement System Delivery Method

Ahmed Alofi (M.S.), Yasir Alhammadi (M.S.), Dean Kashiwagi (PhD), Jacob Kashiwagi (PhD) and Kenneth Sullivan (PhD)

Arizona State University
Tempe, AZ, United States

Saudi Arabia has had many issues in delivering mega construction projects, such as delays, high costs, and low customer satisfaction. Some studies show that around 70% of public projects in Saudi Arabia are delayed. One factor that might be causing these performance issues is the traditional low bid contracting system in Saudi Arabia, or the Saudi procurement system. In Saudi Arabia, owners select contractors based only upon the lowest price. This paper researched ways to modify the current Saudi procurement system and show quick and simple modifications that can be done to improve the low performance. This research proposes that by adding the clarification phase from the Performance Information Procurement System (PIPS) to the Saudi traditional procurement process could greatly improve construction performance. The clarification phase requires the selected contractor to submit a project scope, detailed and milestone schedule, potential risks that they do not control, and performance measurement before a contract is awarded. The PIPS system is one of the most successful systems around the world, which shows success rate of 98% in six different countries with risk and cost reduction up to 30%. The clarification phase has been identified as the most important step in the PIPS to ensuring a successful project. This paper conducted a survey among construction professionals in Saudi Arabia, including 157 engineers, 33 consultants 9 owners, 5 vendors, 13 academics, and 28 architects, in order to develop the public procurement system in Saudi Arabia. The participants work in government sectors with an interest in the Saudi Arabian procurement system. The survey confirmed that professionals in the Saudi construction industry believe that the procurement system should be changed and that the inclusion of the clarification phase to the procurement system is a way to improve the procurement system.

Keywords: Design-bid-build, delays, Saudi Arabia, Best Value, contractors' solution.

Introduction

Saudi Arabia has the largest construction industry in the Middle East. Moreover, it is predicted to lead much of the growth in the Middle East through 2015 (World Construction, 2012). The construction industry in Saudi Arabia has encountered many problems resulting in multiple projects in the country failing to meet their objectives. The Saudi government has spent millions of dollars to try to fix the problem.

There have been several studies that were aimed to measure the size of the problem. Zain Al-Abedien (1983) discovered that delays were the norm in Saudi Arabia with 70% of the projects taken up by the Ministry of Housing and Public Works being delayed. Al-Sultan (1989) did another study that shows a similar percentage and concluded that 70% of Saudi Arabia's public projects had time-overrun issues.

On the other hand, Al-Ghafly (1995) surveyed contractors, consultants, and owners to determine the frequency and degree of construction delays. The contractors said that 37% of the projects suffered from delays while the consultants agreed that 84% of the projects under their supervision suffered from delays. In addition, he stated that the estimated time overrun versus the total original time specified for a project amounted to 39%. Assaf and Al-Hejji (2006) conducted a survey to measure the performance of several different projects in Saudi Arabia, they have found that the average percentage of delays in projects is between 10% and 30% of the original schedule.

Al Turkey (2011) conducted a survey by distributing a questionnaire to more than 300 project managers from different sectors and disciplines. The questionnaire addressed implementation issues associated with projects in Saudi Arabia, such as project structure and organization; this study concluded that 80% of the projects were subject to overrun costs, while 97% faced time issues. Another study was conducted to identify the main causes of the delay in Saudi construction industry. These studies identified 63 factors that adversely affected projects, and these factors were classified into four main criteria. The most impactful factors were those related to the client's selection process (Albogamy et al, 2012).

Problem

One of the major causes, which affects the Saudi public construction performance, is the Saudi procurement system delivery method. Studies have shown that there is a correlation between low performance and using the low bid method (Assaf and Al-Hejji, 2006; Kashiwagi, 2013). According to Albogamy (2012) the major risk that affects project performance is the use of the low bid delivery system in the Saudi government procurement.

Previous research has found that the Performance Information Procurement System (PIPS) is one of the most successful procurement systems around the world in terms of its ability to deliver high performing construction projects (Kashiwagi, 2013). Since 1994, Dr. Dean Kashiwagi has been testing the PIPS model, through the Performance Based Studies Research Group (PBSRG) at Arizona State University, more than 1,800 times in 32 United States and six countries, delivering \$6.4 billion in construction and non-construction services with a success rate of 98% (Kashiwagi, 2014; PBSRG, 2014).

Proposal

This research proposes that by analyzing the difference between the low performing Saudi traditional procurement model (low bid or design bid build method) with the high performing PIPS model, a potential solution can be developed that will improve construction performance in Saudi Arabia.

The main objectives of this research include the following:

1. To identify the main differences between the Saudi procurement system and PIPS.
2. To identify a potential solution that could improve the current public procurement system in Saudi Arabia.
3. To identify if professionals in the Saudi construction industry agree that the procurement system should be improved and if the proposed solution is viable in the Saudi construction industry.

Methodology

The following steps were performed to verify the proposal and achieve the objectives of the research:

1. Review the current Saudi Arabian procurement system.
2. Review the Performance Information Procurement System (PIPS).
3. Compare the two delivery methods and identify the fundamental differences.
4. Conduct a survey with the aim of measuring the view of construction industry participants on the current system and the proposed improvements.
5. Propose a solution based on the PIPS concepts and survey.

The Government Procurement System in Saudi Arabia

The Ministry of Finance in Saudi Arabia published the Government Procurement System in March of 1997, issued by Royal Decree No. M/14, which can be found on the official website. The system received minor changes in September of 2006, issued by Royal Decree No.58M. A government entity can make three different types of purchases: competitive, direct, and specific/special/unique purchases. Most construction services are purchased under the competitive category. However, some of the purchases are unique. The Saudi procurement system aims to uphold several principles such as justice and equality, separation between personal interests and the interests of the government, enhanced transparency, and maximized benefits through competition.

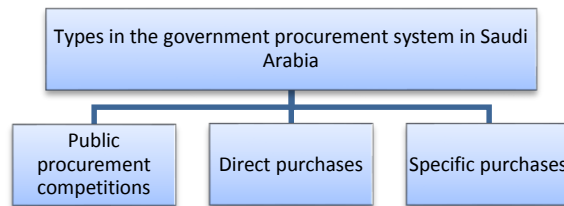


Figure 1: Different Types in the Government Procurement System in Saudi Arabia (Ministry of Finance 2006)

Government Procurement under Public Procurement Competitions

Projects under the public procurement competitions start with the proposal submission phase. This phase includes sending an announcement to all the competitors identifying the date of the pre-bid meeting, the deadline for submitting bids, and the location that the bids will be opened. At the appointed date, all of the bids will be opened at a specific location and the selection phase will begin. In this type of procurement, the main factor that determines the winning contractor is the lowest price. The three main phases of the procurement process are shown in Figure 2.

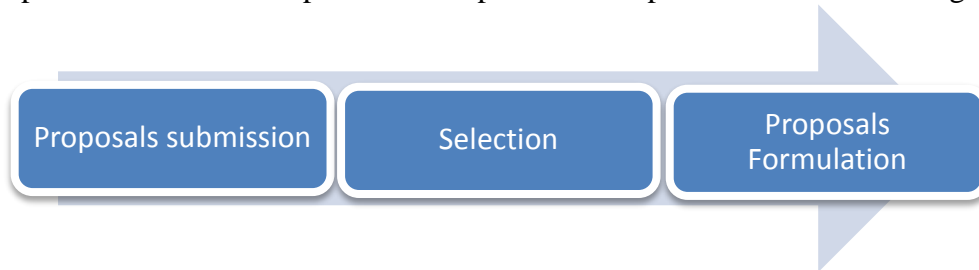


Figure 2: Vendors' selection phases (Ministry of Finance, 2006).

The selection phase is the most important phase in this process. In this phase members of the evaluation committee review the vendors' offers. If all of the provided offers' prices are more expensive than market price (project budget), there are two different ways to handle this situation as follows:

1. The members of the evaluation committee will negotiate with the vendor who has the lowest proposal to reduce his price to be close to market prices. If the vendor refuses to lower his price, they will negotiate with the vendor who has the second lowest offer.
2. If the government is not able to find a vendor who has a cost similar or close to the market price, then the Commission will remove one or more of the project specifications provided, so that it does not affect the project in the future.

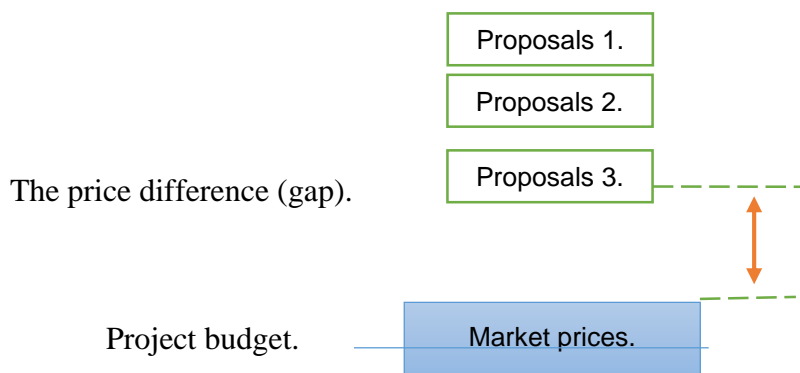


Figure 3: Handling with proposals (Ministry of Finance 2006)

The final phase in the process is the proposal formulation phase. In this phase the proposals are formulated and submitted. The Ministry of Finance (2006) specifies that the only language that is acceptable to use is Arabic, but they do not mind providing another language alongside Arabic. All the documents such as contracts, time of the tasks, project specifications, drawings, and

correspondence need to be in Arabic. The operation and maintenance contracts must be in the period of five years (there may be an increase in the period as deemed appropriate) (Ministry of Finance, 2006).

Change Difficulties in the Saudi Procurement System

Since the Saudi procurement system was initiated in 1977, few changes have been made to the process. Alyaum newspaper (2013) interviewed Nasser Al-Hajri, who works as a member of Chamber of Commerce in the eastern region in Saudi Arabia. He identified that the current system is outdated and has not been developed over the years, focusing only on cheap prices and does not include quality. Sabq online newspaper (2015) also identified the procurement system has many gaps causing significant damage to development plans in the country. The newspaper hinted that it is due to the difficulty the country has in changing policy. One of the biggest issues in improving the Saudi procurement system is the slow changing policy in the country. Thus, any solution must fit into the current legal structure of the country.

Performance Information Procurement System (PIPS)

The PIPS model has four phases as shown in Figure 4. The phases focus on requiring the contractors to prove that they are experts who have a proven record of completing similar projects and know how to ensure the completion of the project being bid on (Kashiwagi, 2014). It seeks to do this with reducing transactions between the owner and the contractor. Its objective is to reduce the effort of all parties involved and utilizing the expertise of contractors to reduce project risk and improve performance. The process consists of the following four major phases:

1. Pre-qualification
2. Selection
3. Clarification
4. Execution

During the prequalification phase, the client and vendors receive education and training on the Best Value Approach and how to use performance information to increase the competition. Additionally, the client may have stipulations they set before the RFP is released to include ensuring vendors meet the legal and financial requirements to run the project. During the selection phase, vendors compete based on their level of expertise. This is determined by their past performance metrics, ability to identify risk, and capability of their key personnel. The vendor that is highest ranked moves into the clarification phase. In the clarification phase, the vendor is required to explain how they will accomplish work efficiently and with high customer satisfaction. They are required to identify performance metrics that they will track throughout the contract. Vendors do this by creating a plan that includes their scope, detailed and milestone schedules, budget, risk management plan (RMP), and performance metrics. Vendors then set up a meeting to clarify the project to the owner for approval. Upon approval of the project, the last phase vendors move through is the execution phase. In this phase, vendors will receive projects as work is required. Each vendor's project progress is tracked using a Weekly Risk Report

(WRR), which is an excel spreadsheet that measures cost and schedule deviations. The WRR is filled out by the vendor and is turned in each week to the client. The WRR is submitted to the client throughout the execution of the project, and becomes performance documentation of the project after completion.

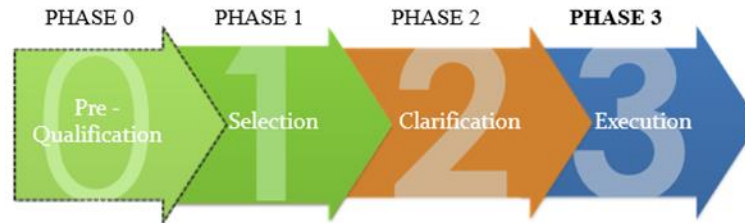


Figure 4: Four Phases of PIPS

Previous studies have found that the most important phase for ensuring a successful project is the clarification phase (Kashiwagi, et al., 2004a; Rivera, 2013; Kashiwagi, 2014) for the following reasons:

1. It requires a contractor to pre-plan the entire project and minimize all concerns of the client before a contract is signed. Contractors cannot fulfill this requirement unless they are experts at what they do. One of the most important factors to ensuring a successful project is the expertise of the contractor performing the work.
2. This ensures that the contractor selected in Phase 1 is an expert and knows how to complete the project.

A Comparison of the Performance Information Procurement System (PIPS) and the Procurement System in Saudi Arabia

Table 1 explains the comparison between the Saudi procurement system and PIPS delivery method. The main difference between PIPS and the current Saudi procurement system is as follows:

1. PIPS selects based on expertise and proven performance.
2. PIPS requires the contractor to clarify and determine the contract and requirements of the project.
3. PIPS utilizes the expertise of the contractor.
4. PIPS does not award a contract until the contractor has proven that they are an expert through showing verifiable performance metrics, creating a project plan, identifying project risks, and minimizing the owner concerns.
5. The Saudi procurement system requires the owner to manage, direct, and control the project.

Table 1

A comparison of PIPS and procurement system in Saudi Arabia

Phases	PIPS procurement system	Saudi Arabian procurement system
Pre-Qualification and Proposals submission	<ul style="list-style-type: none"> • Education and training. • Using matrices. • May include financial info and insurance. 	<ul style="list-style-type: none"> • There is an education for contractors among the finance ministry. • Bidding must be by the same time and place with all the required documents, such as total price, 1-2% of primary financial guarantee. • The owner may exclude contractors, if the project size is larger than their financial and technical capabilities.
Selection	<ul style="list-style-type: none"> • Vendors selected for their expertise, how they can control risks with value added, cost of the project and interview (five criteria). • Zone prices are only more or less than the project budget, around 10%. • Do not select based only on the lowest price. 	<ul style="list-style-type: none"> • The minimum number of vendors is two. • Selection based on the lowest price, and the price should be in the market prices. • In some cases, removing some elements from the project. • The contractor's proposals should be in the market prices or less up to 35%. • Prices are negotiable.
Clarification	<ul style="list-style-type: none"> • Scope. • Project schedule. • Identify risks that are with and without control. • Performance measurement. • Milestone schedule. • WRR that includes RMP. 	<ul style="list-style-type: none"> • Negotiations with the selected contractor on price and scope. • Determination of rewards and penalties in the contract.
Execution and Implementation	<ul style="list-style-type: none"> • WRR (weekly risk report). • DR (directors report). 	<ul style="list-style-type: none"> • There is an inspection of the contractor's performance by the consultant.
Risk handling	<ul style="list-style-type: none"> • WRR (weekly risk report). • Using experts to identify risks. 	<ul style="list-style-type: none"> • Punishments system.

Based upon the differences in PIPS and the current Saudi procurement system, the most viable and impactful changes that could occur would be to add the clarification phase in the PIPS process to the Saudi procurement system. This is because no changes would be required legally to implement the clarification, due to the clarification phase activities being able to pass for contract negotiations. There are other portions of PIPS that could be used to improve the Saudi procurement system, however, they are more difficult to implement.

Construction Professional Survey Research

A survey was created asking two types of questions:

1. Current satisfaction and performance of the current Saudi procurement system.
2. Agreement and feasibility of the proposed improvements to the current procurement system.

The following six questions were asked:

1. Do you think that the traditional Saudi procurement system selects poor performing contractors?
2. Do you think that the selection of contractors based only on the lowest price criterion, affects project negatively?
3. Requiring the contractor to identify risks before signing a contract, would improve project performance.
4. A contractor having a plan before signing a contract will improve the performance of the project, thus minimizing losses in time and money.
5. Requiring a contractor that review the scope of a project and verify that it is correct, will improve project performance.
6. Requiring a contractor to resolve all owner concerns before signing a contract, will improve project performance.

The participants were asked to rate each questions on the following two scales:

1. Strongly Agree; Agree; Don't know; Disagree; Strongly Disagree.
2. Yes; No; I am not sure.

The surveys were then sent out through the head of the government engineering professional group to all of the participants in government sectors with an interest in the Saudi procurement system. The response was 245 surveys returned out of 664 participants, this included: 157 engineers, 33 consultants 9 owners, 5 vendors, 13 academics, and 28 architects.

The experience of the respondents ranged between less than 3 years of experience and more than 16 years (124 participants had less than three years, 128 participants had between 4 to 15 years, and 34 participants had more than 16 years). All participants have practical experience in the most common types of construction such as residential buildings, commercial building, healthcare construction, industrial construction and heavy civil construction.

The results of the survey identified the following:

1. 81% of participants in the survey believe that the traditional Saudi procurement system selects poor performing contractors.
2. 95.97% of participants think that the selection of contractors based only on the lowest price criterion affects projects negatively.
3. 89% of participants either strongly agreed or agreed that if a contractor were required to identify risks before a contract was signed would improve project performance.
4. In addition, 96% of participants strongly agreed or agreed that requiring a contractor to submit a plan before a contract is signed, will improve the performance of the project, thus minimizing losses in time and money. Only 1% disagreed with this and the rest were unsure (3%).

5. 95% of participants strongly agreed or agreed that if a contractor was required to review the scope of a project and verify that it is correct, this would improve the performance of their projects.
6. 82% of participants strongly agreed or agreed that requiring a contractor to resolve all owner concerns before a contract is signed, would help improve the performance of their projects.

Upgrade the Saudi Arabian Procurement System Delivery Method

Based on the results of the survey, which supports making some improvements into the Saudi procurement system, a new phase will be proposed to be added to the existing Saudi procurement model: the clarification phase. This phase will ensure an expert has been selected, which is one of the biggest factors in ensuring project success and high performance.

This addition would create four different phases in the Saudi procurement process: Proposal Submission, Selection, Clarification, and Contract Formulation. All vendors have to pass the four phases before the selected vendor will be able to sign the project contract.

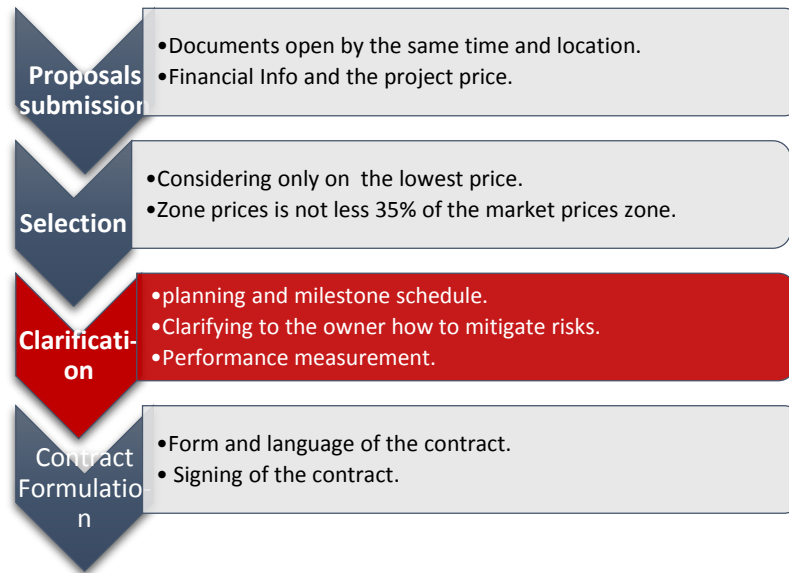


Figure 5: Proposed Upgrade to the Saudi Arabian Procurement System

Table 2 explains each phase in the proposed Saudi procurement model. The following is a more detailed explanation of each of the four phases:

Table 2	
<i>Upgrade the Saudi Arabian Procurement System</i>	
Phase	Upgrade the Saudi Arabian procumbent system Delivery Method
Proposal Submission	<ul style="list-style-type: none"> • Proposals must be submitted at the same time and location. • The owner may exclude contractors, if the project size is larger than their financial and technical capabilities. • May include financial info and the project price in one page.
Selection	<ul style="list-style-type: none"> • The minimum number of vendors is two. • Vendors selected based on only lowest prices. • Zone prices is no less 35% of the project budget in market prices zone.
Clarification	<ul style="list-style-type: none"> • Scope. • Project schedule. • Identify risks that are with and without control. • Performance measurement. • Milestone schedule.
Contract Formulation	<ul style="list-style-type: none"> • Form and language of contracts. • Signing of the contract.

Upgrade the Saudi Arabian Procurement System Delivery Method

The proposal submission phase is all about attached documents, which consist of:

- Financial security: primarily 1% of the total price of the project.
- Price, which is offered by the vendor.

Moreover, all documents must be submitted in the same place and time that are specified in the announcement of the project.

1. Selection phase: Contractors are selected based on the lowest price, as is the current situation in the Saudi government procurement system to win the project requirement. The selection phase proposed is based on the following conditions:
 - a. Two contractors is a less then acceptable number for a competitive system.
 - b. The vendor selected must be the owner of the winning contractor and have the lowest price compared to other offers.
 - c. The proposed price of the contractor must be within market prices (project budget) and must not be more expensive than market prices.
 - d. The proposed price must not be less than the market price (project budget) by 35%.
2. Clarification phase: The winning contractor who has the lowest price, has to pass the clarification phase, and he/she must complete the following:
 - a. Planning and milestone schedule.
 - b. Clarifying to the owner how the contractor will mitigate risks.
 - c. Create performance measurements.

3. **Contract Formulation:** After the contractor/vendor has completed all phases successfully, he has to formulate contracts to be able to sign them with the owner. In this step, the contract is documented in the Arabic language and the winner can attach the contract in a secondary language, as well. The second step is for all parties (the contractor and the owner) to sign the contract.

Conclusion & Recommendations

Saudi Arabia has struggled to deliver high performing construction services over the last 20 years. The current Saudi construction procurement system has been identified as one of the causes of this low performance. To find a solution to improve the procurement system the Performance Information Procurement System (PIPS) was analyzed, due to its documented high construction performance.

The analysis identified that the following are the main difference between the current Saudi procurement system and PIPS:

1. PIPS selects based on expertise and proven performance.
2. PIPS requires the contractor to clarify and determine the contract and requirements of the project.
3. PIPS does not award a contract until the contractor has proven that they are an expert by showing verifiable performance metrics, creating a project plan, identifying project risks, and minimizing the owner concerns.
4. PIPS utilizes the expertise of the contractor.

Out of the four main differences, it was identified that the most viable and impactful difference, would be the implementation of the clarification phase, or in other words, requiring the contractor to clarify the project and create a plan before an award is made. This would take no legal changes and could be implemented during the usual negotiations phase.

To verify if this would be viable a survey was conducted to identify if construction professionals in Saudi Arabia agreed that these changes would be an improvement and if they felt the current procurement process needed to be improved and was causing low performance on projects. The survey was distributed from the head of the government engineering group, which 245 professionals participated in the survey with the following responses:

1. 96% of participants think that the selection of contractors based only on the lowest price criterion, affects project performance negatively.
2. 89% percent of participants believe that if a contractor were required to identify risks before a contract was signed would improve project performance.
3. 96% of participants believe that requiring a contractor to submit a plan before a contract is signed will improve the performance of the project.
4. 95% of participants believe that if a contractor were required to review the scope of a project and verify it was correct would also improve the performance of a project.

5. 82% of participants believe that to require a contractor to resolve all owner concerns before a contract is signed would help improve the performance of a project.

Based upon the analysis of PIPS and the survey that was conducted with Saudi construction professionals, this research identifies that implementing the PIPS clarification phase in the current Saudi procurement system, could improve construction performance on projects.

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Appendix A: Survey Questions

1. Do you think that the traditional Saudi procurement system selects poor performing contractors?
 - a. Yes.
 - b. No.
 - c. I am not sure
2. Do you think that the selection of contractors based only on the lowest price criterion, affects project negatively?
 - a. Yes.
 - b. No.
 - c. I am not sure
3. Requiring the contractor to identify risks before signing a contract, would improve project performance.
 - a. I strongly agree • I agree • I am not sure • I disagree
 - b. I strongly disagree
4. A contractor having a plan before signing a contract will improve the performance of the project, thus minimizing losses in time and money.
 - a. I strongly agree • I agree • I am not sure • I disagree
 - b. I strongly disagree
5. Requiring a contractor that review the scope of a project and verify that it is correct, will improve project performance.
 - a. I strongly agree • I agree • I am not sure
 - b. I disagree • I strongly disagree
6. Requiring a contractor to resolve all owner concerns before signing a contract, will improve project performance.
 - a. I strongly agree • I agree • I am not sure • I disagree
 - b. I strongly disagree