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Moving Nigeria's Project Procurement System to Best Value: A Prescription

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Abstract
A new sustainable and best value procurement initiative suitable for use in developing countries has been developed. The procurement system, the Performance Information Procurement System (PIPS) was developed in the United States (US), and has been tested in Botswana and recently in India. PIPS not only stabilizes the procurement system, it transfers the risk and control to contractors who must act in the best interest of the client. The transparency, accountability, and risk management orientation of the PIPS structure disengages relationships, inaccurate expectations, and bureaucratic and political actions. The strength of PIPS includes minimizing the need for professionals representing the client to make decisions, direct, and control contractors. PIPS has been tested for 20 years in the US, with 98% performance on over 600 projects. Recent tests outside of construction reveal that the efficiency of PIPS can minimize up to 50% of the procurement transaction costs. We hypothesized that paradigm shift from the low-bid or price-based procurement to the best value procurement through the application of PIPS technology is a potential panacea capable of extricating corruption, collusion, fraud, bid rigging, ethical violations and negative headlines from developing countries' procurement environment rather than advancing measures that only scratches the problems on the surface. We infer that a adoption of a new initiative in best value procurement using PIPS technology can revolutionize the procurement environment in Nigeria in particular and the developing countries as a whole.
Keywords: Best value, public project procurement, Performance Information Procurement System (PIPS), sustainable consumption, developing countries, Nigeria.

1. Introduction

The public procurement system in Nigeria like many other developing countries is far from being efficient. This can be discerned from multitudes of reports on project cost and time overruns abandoned infrastructure projects, change orders, quality tradeoffs, procurement collusions and widespread clients' dissatisfaction (Aibinu & Jagboro, 2006; Ogunsemi & Aje, 2006; Wahab, 2005; Odusanmi & Olusanya, 2000; Mbachu, 1998; Izam & Kolawole, 1998; Manfield, Ugwu & Doran, 1994).

The escalating economic loss through procurement and its attendant negative image on the country, led, in the year 2000, to the creation of the Budget Monitoring and Price Intelligence Unit (Due Process) - an arm of the Federal Government mandated to inject probity into the country's procurement system. The idea behind Due Process was to check inordinate use of discretionary power wield by government officials in the award of contracts. Outside claims of saving billions of naira through contract award reforms, Due Process to date, has not been able to come up with the required panacea that would actually solve or substantially improve poor procurement performance in the country. Instead, procurement related scandals continue to escalate and reverberate to make headlines overseas. At a stakeholders' forum on poor performance of procurement system in Nigeria few years ago, a former boss of Due Process, Wahab (2006) remarked:

"*reforming our procurement system became urgent and imperative as a result of the abuses in the way and manner contracts were awarded and executed in Nigeria over the years. Apart from basing such expenditure decisions on sentiments of ethnicity, tribe or other primordial considerations, the abuses were major sources of diversion of public funds to private funds to private use, monumental corruption and avenues of denial of social amenities to the people".*

In actual fact, it appears that the competition between procurement problems in the country and the proffered solutions has inadvertently assumed the dimension of a mismatched track race; the problems surging forward at a record breaking speed, while ``````````the solutions strut and trails far behind. In a genuine effort by Nigerian Government to get the country's procurement out of the wood, the World Bank in association with some private sector organizations and assistance from national and international consultants were engaged and charged with specific task of coming up with a strategy to improve procurement performance in the country through reduction in corrupt practices on contracts. The output from this effort manifest as Nigeria's Country Procurement Assessment Report (CPAR). The following were identified in the CPAR as weaknesses in the country's procurement system Ekpenkhio, (2003):

- That Nigeria lacks a modern law on Public Procurement and permanent oversight body to provide guidance and monitor purchasing entities;

- That the Finance (control and Management) Act, 1958, together with the Financial Regulations which set basic rules for managing public expenditure have gaps, deficiencies and faulty implementation of existing regulations on procurement (e.g. lack of permanent arrangements for control and surveillance) which create opportunities for bribery and corruption;

- That due to inflation and lack of regular adjustments on the thresholds of the approving limits of the Tender Boards, their authorization were constantly being eroded resulting in abuses, prominent among which is splitting of contracts;

- That there was proliferation of tender boards which were perceived by the private sector as sources of delays and non transparency. In addition, these tender boards appeared to have limited mandates with powers to decide contracts de facto resting with the Permanent Secretary and the Minister/Commissioner;

- That customs systems and procedures were cumbersome and major causes of delay in clearing goods, and hence a source of corruption; and

- That Procurement is often carried out by staff that substantially lacks relevant training.

The problems identified in the CPAR, despite the intensive efforts and huge expenses incurred in the process, were mere symptoms of the procurement disease while the solution proffered remain far cries from the required panacea since they are meant to cure the symptoms rather than the disease. Any attempt to cure or prevent the disease must explore some deductive logics associated with traditional procurement practices. Two deductive logics stand out in this respect which when examined carefully will emerge as the actual sources of the procurement problems. These are the management and control by client at all stages of project execution and low-bid or price- based award. The objective of this paper is to explore these two syndromes and proffer a paradigm shift that would herald sustainable procurement in Nigeria.

2. Construction Industry Structure (CIS)

In order to fully understand how the client's management and control mechanism and the low-bid environment are enigma to procurement performance, we first explain the construction industry structure.

The industry structure (CIS) analysis was created in 1991 (Kashiwagi, 1991), and has since been modified and perfected (Kashiwagi, 2009). The industry structure (IS) chart is shown in Figure 1. The industry is divided into four quadrants by performance and competition. Quadrant I and II are the more dominantly used quadrants. If a particular skill or expertise is required, Quadrant III (sole source, long term partnership) is used. However, with a downturn in global economy, Quadrant I, the low bid award, is the most dominant environment. The interest in this paper is in Quadrant I and II due to high competition and resulting lower price. While Quadrant I tends to explain the causes of the disease afflicting the Nigerian procurement system, Quadrant II tends to proffer curative and preventive measures for the disease.

2.1 Low-bid Environment

In the low bid environment, the following steps are usually taken (Sullivan, 2007):

1. A client has a requirement.
2. The client hires professionals to transform their requirement from a non-technical, expectation (time, cost, and quality) into a technical requirement that can be competed among competing contractors.
3. The assumption is that the contractors are "equal" or "relatively the same" and can be managed, controlled, and inspected to ensure the expectation is achieved.
4. In this process the client's representatives, the professionals are in control of the project.

Over a number of years, a couple of theoretical flaws were discovered in the process (Kashiwagi, 2002). The first major flaw is the use of minimum requirements in the specifications. Using minimum specifications, the client's representatives used the minimum standard as a method to identify what is not acceptable. Because the

project is normally required to award to the lowest price, the vendors used the minimum requirement as the maximum the client will receive. With the buyer and supplier moving in different directions (Figure 2), the price based environment creates an adversarial environment (Kashiwagi, 2002).

Complicating matters is the concept that minimum standards are usually subjectively set, requires interpretation, and often is difficult to measure. This causes confusion, and in the confusion, suppliers and contractors are motivated to drive performance down.

Another issue that arises is shown in Figure 3 (Sullivan, 2005). The high performing contractors can see a project from beginning to end. Because they are experts, the only risk they have is the risk that they do not control. To maximize their profit, they preplan to manage and minimize the risk that they do not control. Contractor #4 on the other hand, is relatively inexperienced, lacks expertise, has technical risk, and does not factor in the risk that they do not control. While Contractor #1 does not have to be managed and controlled, Contractor #4 requires management and control. Because the only selection factor is price (after prequalification), Contractor #1 is actually encouraged to act like Contractor #4, and not consider risk that the contractor does not control, does not preplan, and price out only what the client's representative has identified. Contractor #1 is actually being directed to increase the client's risk, to become reactive, to minimize the use of their expertise, and to not control and minimize risk. This result has some damaging ramifications as contractor project managers and craftspeople take a reactive, non-thinking, minimum standard approach.

Figure 4 shows that client actually controls the level of skill used by contractors (Kashiwagi, 2006). The difference between the price based owner, the partnering owner, and the best value owner, is that the best value owner transfers the risk and control to the contractor, while the price based owner tells the contractors in detail how to do the project, when to do the activities, and exactly what to do; The best value owner transfers the risk and control to the contractor requiring someone who knows what they are doing, while the price based owner is awarding to the lowest price, and requires someone who reacts to the expert, who is obedient to their directions whether optimal or not. The experienced project managers and craftspeople are paid more, thus requiring a more efficient environment where they have control, preplan, do projects just once, and do not have any problems. Their efficiency is minimized tremendously in the price based owner's environment, thus making them overpriced and expensive. This can be seen in many industries and countries as:

1. The population of inexperienced increases
2. The population of experienced decreases
3. There is very little motivation for technical training
4. Transfer of risk and control, the use of performance measurements, contractors practicing quality control, and the measurement of deviation is not possible in the price based environment.
5. In underdeveloped countries like Botswana, the government is now dependent on foreign contractors and experts, because they have no incentive for local contractors/craftspeople to increase in technical skill.

2.2 Client's Involvement in Low-bid Project Execution

A cursory examination of project execution under **TPS** in developing and developed countries will show that it follows the traditional procurement system being widely practiced elsewhere in the world using Quadrant I of Figure 1. This is especially true in familiar environments such as UK, The Netherlands, Botswana, and the US Army Corps of Engineers. As an example, the procurement root in Botswana with the flow of information from one entity to the other is shown in Figure 5 (Adeyemi *et al.* 2009). The same root applies to other developing countries still giving preference to TPS when for example, in Nigeria, PPADB is replaced by Due Process and DBES replaced by the technical arm of Due Process.

The common denominator among procurement practices in all these environments are to be found in clients decisions from project conceptualization to completion and this usually manifest as:

1. Identification and validation of scope, funding, and construction period.
2. Identification of the best designer.
3. Confirming that the design is accurate and complete.
4. Identification of contractors with perceived capacity to handle the work.
5. Asking the lowest- bid contractor to finish within time and budget

6. Taking over the technical and non technical risks associated with the project.

When these decisions are made, the procurement entity is never accountable in any way in cases where there are errors in some of the decisions. If the decisions are not accurate, the impact is risk as the project continues. Other problems associated with one party making a decision, then directing another are:

1. Confusion, as no one knows who is actually at fault.
2. No accountability.
3. Legal action and dependence on the contract language (adversarial relationship).
4. Contractors become reactive. They follow instructions even if they know it is high risk.
5. Meaningful performance measurements will not exist. Any effort to make someone accountable will turn into meaningless transactions which take time, cost, and energy.
6. Costly and unsustainable.

2.3 The Best Value Quadrant

The best value quadrant or Quadrant 2 has high performance and high competition. It differs from the low bid award quadrant in the following ways (Kashiwagi, 2004):

1. It does not use minimum standards combined with low price.
2. It makes the selection of a contractor based on value (performance and price).
3. The contractors have high performance.
4. The contractors do quality control.
5. The contractors manage and minimize risk that they do not control.
6. The contractors set the project scope, time, and cost (baseline), and then measure deviations of time and cost in meeting that baseline.
7. The client's representatives do quality assurance.
8. The risk that the best value contractor does not control, is managed and minimized by holding the client accountable.

Most often, widely accepted practices are mistaken for best value practices most especially in the developing countries where TPS still dominate the procurement system significantly. Even in the developed countries that have long identified the weaknesses inherent in TPS, they only promote a shift to procurement systems such as design-build, design- bid-build, construction management, management contracting, etc. which still involve management and control. Best Value practices are based on (Kashiwagi, 2009):

1. Logical and deductive concepts.
2. Outsourcing, transferring control and risk, promoting the delegation of work to the lowest level entity executing the work and who is best qualified to minimize the subsequent risk.
3. Maximizing performance by minimizing the risk of not being on time, on budget, and not meeting the expectations of the client or owner or manager.
4. Increasing efficiency by minimizing the efforts required to deliver project.
5. Resulting in a "win-win" situation. They minimize leverage of any kind. It allows the client/buyer to receive the best value and allows the contractor/vendor to maximize their profit.

3. Performance Information Procurement System (PIPS) as Best Value Technology

PIPS was developed in 1991 (Kashiwagi, 1999), and tested several times from 1994 to the present. PIPS is composed of (Kashiwagi, 2008; Goodridge, 2006; Kashiwagi, 2009):

1. **Theory:** The Information Measurement Theory (IMT) states that past performance will identify future performance. It also states that experience can be measured in terms of being able to predict rather than react. It states that processing speed, ability to perform and improved performance can be measured in relative terms. IMT also states that risk is minimized by the owner by listening to and differentiating between contractors. All data is subjective, it is a perception that is biased. IMT states that bias that does not predict a future outcome should be minimized.

2. **Process:** PIPS is composed of the following steps: past performance identification (contractor identification of differentiating criteria, contractor identification of past project references, collection of performance data,

compilation of past performance barcodes), request for proposal (full design or system requirements and the owner's requirement in terms of relative weighting of the performance criteria showing past performance, current capability, future capability), pre-bid meeting, submission of bids and management plan, interview of key personnel, prioritizing the alternatives based on differential of barcode data by an artificial intelligent processor (past performance data, ability to identify risk and how to minimize the risk), the review of all documentation by the top prioritized contractor, a pre-award meeting where the contractor agrees to perform the construction on budget, on time, meeting the quality expectation of the owner, award of the contract, construction, rating of contractor's performance (performance of the project is worth 25% of the future performance line).

3. **Past performance barcodes:** Past performance of critical elements of the general contractor's team including the general contractor and key personnel (project manager and site superintendent), and critical subcontractors such as mechanical, electrical, and roofing.

4. **Risk management system:** PIPS uses a Performance Information Risk Management System (PIRMS.) The best value contractor is forced to develop a baseline plan, and measure cost and time deviation from that baseline. The contractor uses a weekly risk report (WRR) and a risk management plan (RMP) to manage and control risk that they do not control.

Dominant performance information is generated by the relative differences between the alternatives. In generating the data, the following rules are used:

1. Allow the party with risk to make the decisions. For example, the contractors should identify the criteria and pick their own references to differentiate and show their capability.
2. Subjective decision making by others should be minimized. The people with the most information should generate data that predicts the future relative performance of the contractor.
3. No one is disqualified. There are no minimum scores or number of references required. The system allows the contractors to every opportunity to do well. If a contractor has done good work and knows their customers, they will be able to prove a past performance. No contractors are pre-qualified or disqualified.

There are six major PIPS safety nets that reduce the risk of nonperformance. These are (Kashiwagi, 2001):

1. Past performance references: The requirement to identify past references will either eliminate a poor performer by low scores or a decision that their scores cannot compete.
2. Management plan requirement: Unless the contractor is qualified and experienced, they will not know how to identify and minimize risk. They will also have difficulty creating a detailed cost breakout and construction schedule.
3. Interview: The lack of capability of a contractor's key people becomes evident in the interview.
4. Prioritization: Only the best available option is selected. The system does not concern itself with the lower performing options. The score of the lowest performing option does not impact the system.
5. Pre-award meeting: The top prioritized contractor is required to review the design with their critical subcontractors. They are required to identify all components of the construction which cannot be built, require clarification, or which can be improved to minimize risk. They are then required to sign a contract, which they will only get financial relief if there are scope changes or unforeseen conditions.
6. Final project rating: The general contractor/vendor is rated on the construction with all the critical subcontractors. It is recommended that the entire team get the same score. The rating is worth 25% of their future performance line and will be posted on the Internet.

Figure 6 (Adeyemi *et al.* 2009) shows the stages over time for selecting the best value contractor, that is, the contractor that can manage the technical risk best among the competing firms. These stages were passed through in the case of Botswana tests.

4. Suggested Objectives for Adopting PIPS in Nigeria

Nigeria as Africa's most populous country and leading economy has a role to play in piloting and transiting other African nations to best value procurement through example.

The authors are inferring that paradigm shift from the current low-bid or price-based procurement system to the best value procurement through the use of Performance Information Procurement System (PIPS) technology is a potential panacea capable of exterminating any form of unsustainable consumptions associated with procurement environment in developing countries rather than advancing measures that only scratch the intrinsic problems of

low-bid on the surface. We took a cursory look at how this inference could be tested in the Nigerian project procurement environment for possible adoption.

The following objectives were suggested to test the inference:

1. Get the major government group overseeing public procurement (Due Process) informed and convinced to make a difference to move toward efficiency, value, and quality assurance, instead of management, direction, and control.
2. Get major users/buyers to use PIPS to deliver both design and construction.
3. Use PIPS to deliver services outside of construction.
4. Convince the management of universities (Vice Chancellors and Principal Officers) including Nigerian University Commission (NUC) to use PIPS to run university procurements.
5. Identify protégés to learn the PIPS technology, the research mentality, and give them the confidence to interface with the industry.
6. Assist some Nigerian Universities offering construction/project management to change their postgraduate program from education based to research based program.
7. Encourage procurement entities to sponsor their middle level manpower to participate in the postgraduate programme.
8. Encourage the Federal Government to create Project Management Centre of Excellence where academics, public procuring entities can interact periodically on procurement issues nationally and internationally.

These objectives shall be achieved by creating large-scale awareness and motivation through:

- presentation of PIPS processes in public and private organizations
- testing of PIPS on a number of life projects in construction and outside construction, beginning with small-scale projects and progressing systematically to large scale projects.

5. Expected Results

PIPS as a technology for paradigm shift to best value and sustainable procurement system is expected to generate enthusiasm and adoption in large number of public and private procuring entities in Nigeria. The technology is expected to perform on time, cost and quality with only two percent deviation. This feat has actually been achieved in the US and the Netherlands (two countries that are currently leading proponents of PIPS through multi-million dollar projects). The efficacy of the technology manifested highly positively on Botswana projects ((Adeyemi *et al.* 2009) and similar results are expected in India where it is recently introduced(Nihas, Kashiwagi and Kashiwagi, 2014).

With continuous test cases, all scandals and biases associated with Nigerian procurement environment shall be removed within a short time. In addition, the new procurement technology shall link the universities offering construction/project management and business curricula with the industry for better research ties. The new technology shall therefore create a win- win environment for all parties involved in the countries procurement business. For the client, managing technical risk as been practiced currently will be removed and can be rest assured that the project will be delivered on time, budget and the required quality. For the contractor/vendor, the fear of management and control mechanisms that demeans his expertise shall be removed. The technical risks are within his control and he has the latitude to execute the project according to his own schedule (as conveyed to the client in his proposal) without any form of interruption from another quarter. Added to this is the fact that his profit increases as opposed to the low-bid that forces his profit margin down. For government, tremendous savings will be made in foreign exchange in terms of money that will be lost to corruption and collusion. This will be coupled with increase in the image of the country and a lower rating by transparency international as a corrupt country.

7. Conclusion

There is plethora of evidence to support the claim that public project procurement system in Nigeria, is inefficient and it has resulted in huge financial loss to the country. These are unsustainable consumptions that do not align with UN call for sustainable development within the comity of nations (WCED, 1987). Efforts to get the country's project procurement out of the wood has not yielded fruitful results as solutions being proffered only scratch the problems in the surface. Adoption of Performance Information Procurement System (PIPS) appears to be a potential panacea that can return the country's public procurement to the path of sustainability. PIPS has the characteristics of selecting best value contractor; transfer technical risks to the contractor; minimize

decisions, management and control by client during project execution; block various avenues for fraud, collusion, bribery and create a win-win situation for all the parties involved in the procurement.

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Dean T. Kashiwagi (PhD) is a professor, Fulbright scholar and founder/director of Performance Based Studies Research Group (PBSRG), Del. Web School of Construction, Arizona State University. He is considered one of the leading experts and researcher in performance-based systems. Since 1992 Kashiwagi has performed over 900 tests totaling $4.6B with a 98% success rate. Most tests have been in construction or related services, but has begun testing outside of construction such as IT services, food services, and radio equipment. He has implemented testing in over 30 different statesin the United States and has testing in 6 different countries (The Netherlands, Malaysia, Finland, Botswana, Canada and the United States) He has recently introduced Best Value Procurement in India. Prior to joining ASU, Kashiwagi was a Project Engineer for the US Air Force during his 14-year tour. He is also an accomplished author with11 books and over 100 articles.

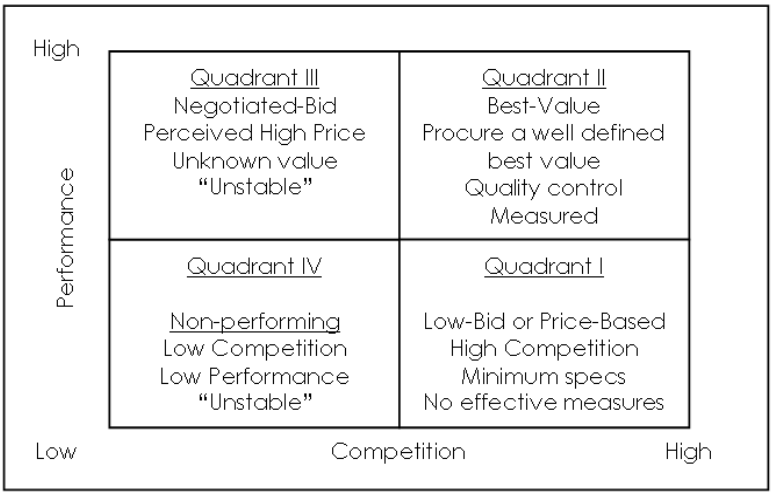


Figure 1: Industry Structure

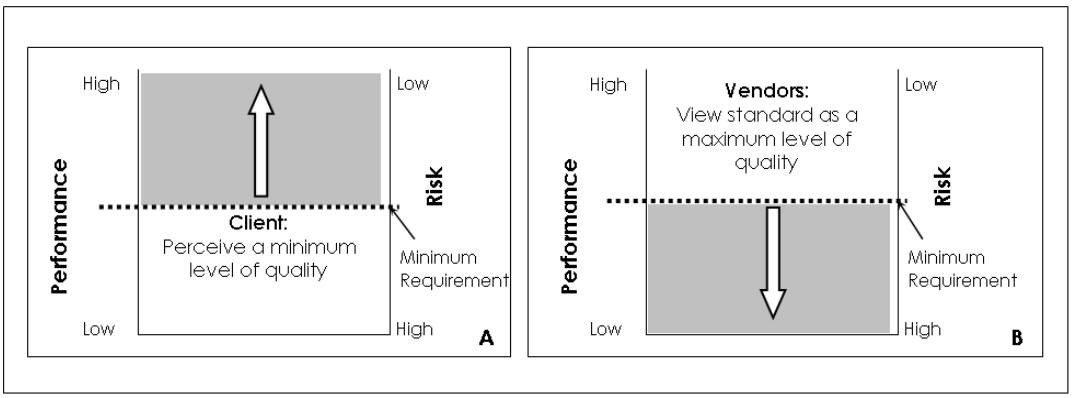
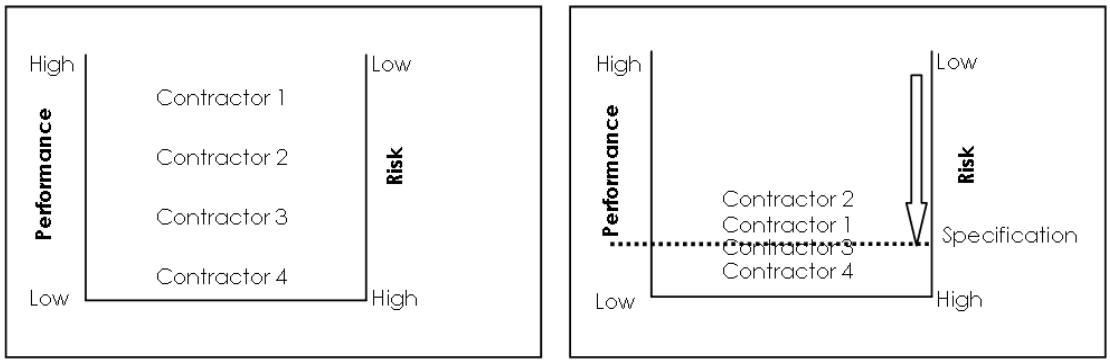


Figure 2: Maximum/Minimum Dilemma



Best Value Award Impact of Price Based Award

Figure 3: High Performance Contractor Motivated to be Reactive

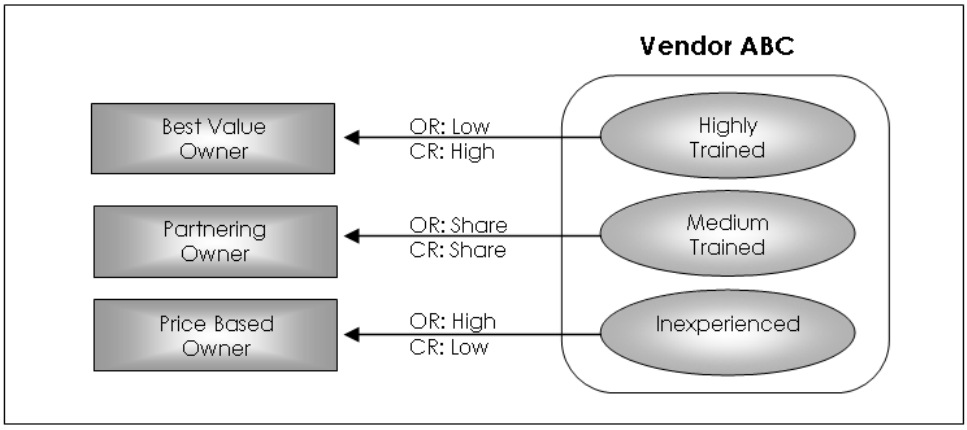


Figure 4: Different Types of Owners
(OR = Owner Risk, CR = Contractor Risk)

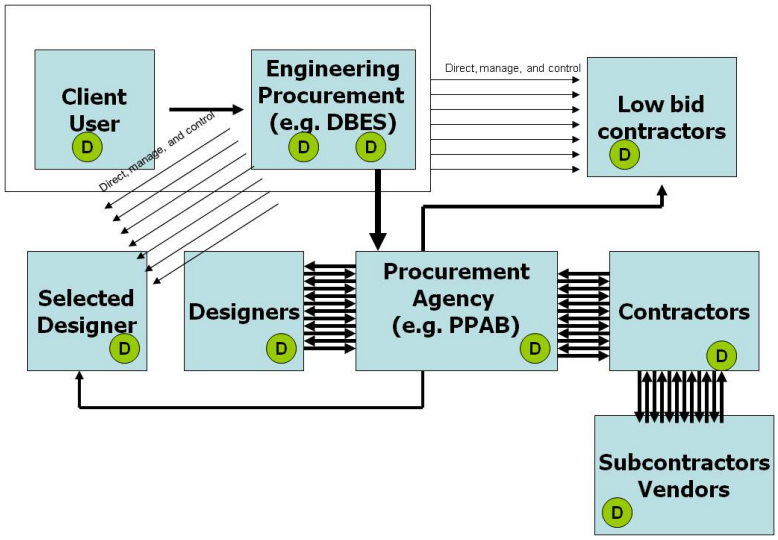


Figure 5: Current Botswana Project Delivery System

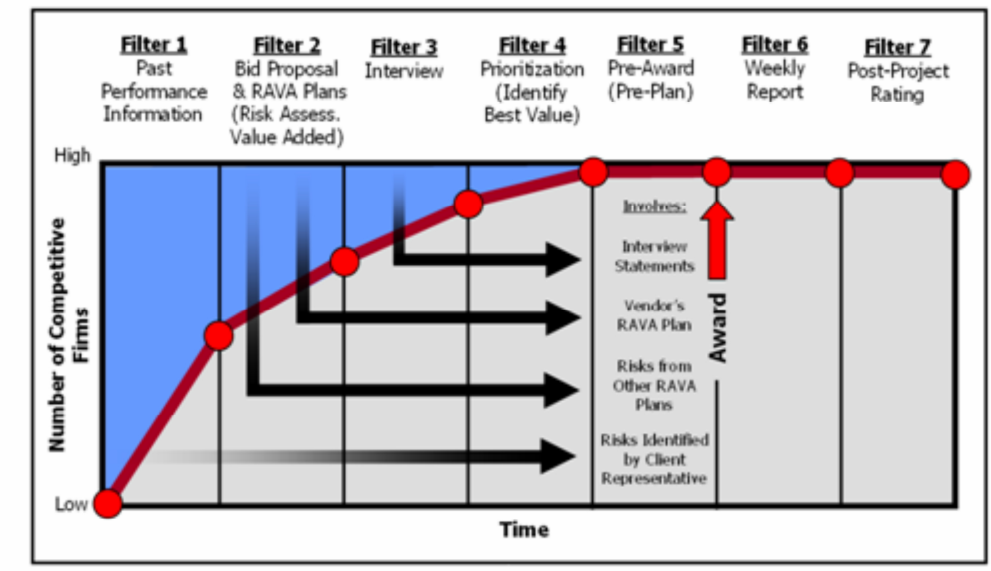


Figure 6: Best Value Contractor Filtering Process

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