

Is it the Culture or an Unstable Procurement Model that Causes Nonperformance in Botswana's Project Management?

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Abstract

A research group at the University of Botswana is investigating how culture and construction delivery system stability affect construction industry performance. They are trying to increase the construction performance of the country in the quickest and simplest way. Currently, the Botswana industry is heavily dependent on foreigners. The researchers are trying to identify if the problem is the underdeveloped culture, or potentially the combination of culture and an unstable delivery system, and can a stable delivery system raise the culture of Botswana. The two potential areas of interest are the country culture, and the project delivery or management model. The authors are using deductive logic, simplistic models, and dominant or extreme information to minimizing the need to get into a long drawn out study of details which may not solve the issue. The objective of the paper is to identify the best method to increase the performance of the construction industry, addressing both the cultural and delivery system problems. The preliminary measurement of the success of the solution is the acceptance of the concepts by major users in Botswana. This paper will propose the potential solution then continue to test out the hypothesis for the next few years. If this solution is valid, it has tremendous potential in underdeveloped countries.

Keywords

Botswana construction culture, Project management, Botswana, Construction industry performance

1. Introduction

The government of Botswana is attempting to improve its delivery of construction to bring better value to the country of Botswana. For the last ten years, the discovery of diamonds has boosted the economic level of the country of Botswana. However, Botswana has not diversified well and has had a difficult time raising the level of quality, production and accountability of the people. Demand and prices of diamonds is decreasing, and the government of Botswana needs to find a way to bring more value and efficiency in its operations and provided services. The current environment of the Botswana construction industry has the following issues:

1. Construction is delivered late and with cost change orders.
2. The level of quality is low.
3. The clients/buyers using pre-qualification and low price as the major selection criteria are dependent on foreign companies and critical mangers and craftspeople for larger, complicated projects.

4. The level of performance of local companies and key personnel is low and they are non-competitive with foreign firms.
5. There are no effective training programs which are increasing the performance and skill levels of the local organizations.
6. The industry uses the model of the client/buyer representative being in control of projects, managing, directing, reviewing, and inspecting the contractor's costs, plans, and work.

2. Problem Statement

The researchers have accepted task of how to raise the level of construction performance in Botswana. They are trying to identify whether the industry culture or current industry delivery systems have more impact on the poor performance of the Botswana construction industry, what is the possible relationship of the two, and without having to collect a tremendous amount of data, what recommendation should be given to the Botswana government groups delivering construction to overcome both culture and industry delivery issues.

3. Definition of Culture

The two factors being studied are the culture of a country and the structural stability of the construction industry. Kluckhohn (1967) defines culture and value as a conception, explicit or implicit distinctive of an individual or characteristic of a group, which influenced the selection from available models, means and ends of action. Hofstede (2005) defines culture as the values, attitudes and behaviors shared by the people of a region. Mintzberg (1998) defines culture as essentially being composed of interpretations of a world and the activities and artifacts that reflect these. Cultural differences can be interpreted as differences in shared values (Hofstede, 1989). Values are defined as broad tendencies to prefer certain states of affairs over others (Hofstede, 1989). Culture includes power distance, human heartedness, performance orientation, assertiveness, hierarchy versus egalitarianism, moral discipline etc. Every country, every city, every industry, and every person has a culture. Culture defines the population sample and culture differentiates people from different groups. Culture defines the existing actions, descriptors, and differences of any population sample. Therefore, by definition, culture defines the people's relative ability to change, to react to outside forces, to become more efficient, and to add more or less value to their population.

4. Definition of Stable and Unstable Industry Delivery Systems

A stable construction industry has been defined by Kashiwagi (2008) as an industry that can:

1. Constantly increase the performance and value of its products and services.
2. Have the capability to consistently offer the product and service to its buyers.

More stable industries continually increase the level of performance of their services, increase the value of their buying community, and change the level of culture to one having more value (Barretta, 2005); i.e. higher income levels, higher education levels, increase gross national product, higher level of standard of living, more opportunities for the population to change their standard of living and professions, and a higher performing infrastructure.

The simplest explanation of industry structure is the Construction Industry Structure chart shown in Figure 1 (Kashiwagi, 1995). The low bid award Quadrant uses minimum standards, does not predict what level of service will be procured, does not transfer the decision making, risk, and control to the contractor,

and forces the client’s representative to do quality control (management, direction, and control and not quality control, because quality control must be performed by the personnel doing the work). As a result, high performers who preplan, control their own project, minimize risk that they do not control, must drop their level of performance and expertise, bid just what is directed, become reactive and blind, and file for change orders when they are surprised (Kashiwagi, 2003). In Figure 2 logic identifies that vendors must send high performers to outsourcing owners who procure best value, and who transfer risk and control to the vendor’s personnel (Kashiwagi, 2005). The other less qualified personnel will bring the vendor too much risk. However, if there are no outsourcing owners, the vendors must send their highly trained personnel to price based owners, who have their own experts, who direct, manage, and control the contractor and their key personnel. This creates conflict. The conflict causes un-needed transactions (meetings, reports, emails, proposals, and counterproposals). The efficiency and effectiveness of the vendor’s experts is minimized in the price based scenario. Quadrant I Low Price Award will result in (Kashiwagi, 2002):

1. Lack of training centers.
2. Low contractor performance.
3. Use of minimum standards that have no relationship with performance, forcing performance and quality down.
4. Both client and contractor being reactive and causes transactions.
5. Low profit margins.
6. Potential cause for contractors to collude.
7. Higher management and consultant fees to give better directions to contractors.

This quadrant will not provide the clients or the contractors with a stable delivery system. It cannot sustain high quality, it cannot continuously improve quality and performance, and it cannot consistently provide performance and quality. This Quadrant is unstable by definition.

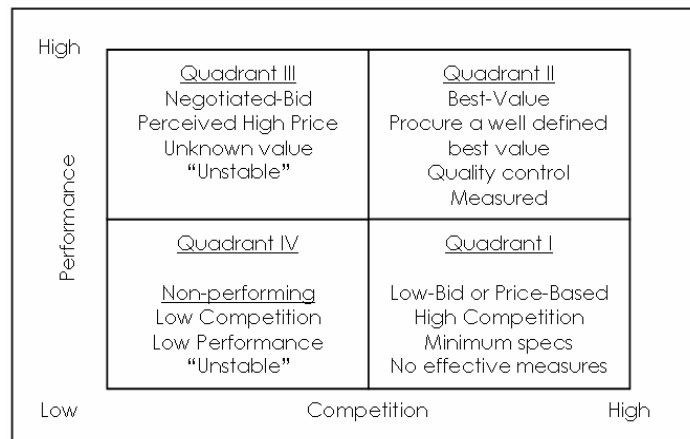


Figure 1: Industry Structure

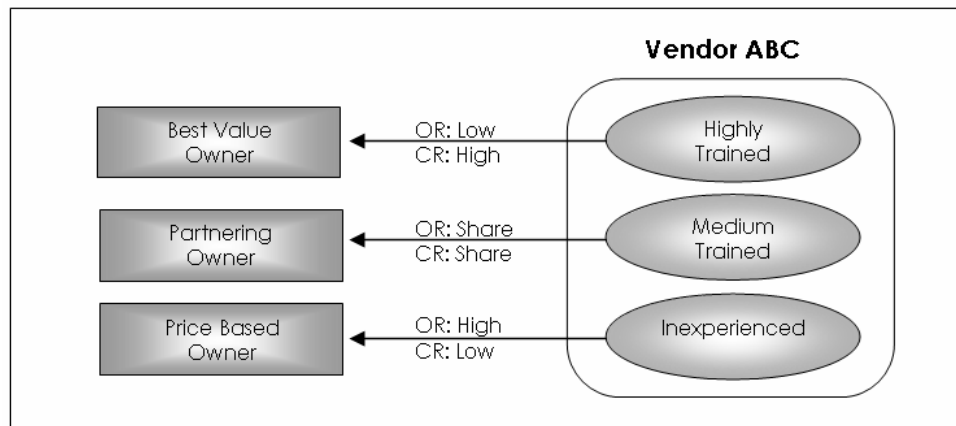


Figure 2: Buyer/Vendor Interface: What Dictates High Performance
(OR = Owner Risk, CR = Contractor Risk)

Conversely, Quadrant II Best Value will lead to the following results:

1. Contractors will strive to continually improve.
2. Contractors will measure their performance.
3. Individuals will preplan, learn to quality control their own work, and be accountable.
4. Contractors will act in the client's best interest (performance by definition).
5. Delivery system will be more efficient.
6. Contractors will be proactive.
7. Client will know what they are buying, before they buy.

Quadrant II is a stable industry delivery system. Contractor performance and value will continue to increase, efficiency and profit will continually increase, and cost will decrease. The industry will be able to consistently provide the buyers with a high level of performance. The overall environment will increase in value, and the risk will be minimized. Also management and control will become redundant transactions that can be eliminated in the long run.

5. Use of Dominant Information and Extremes

To accelerate the decision making and conclusion of this study, the authors will use the concepts of deductive logic and dominance and extremes. Both dominant and extreme conditions are easily recognized and easily agreed upon. Dominant conclusions require less supporting information and data (Sullivan, 2007). The difference between extremes minimizes decision making of people with different experiences and cultural background. It is easier for people to differentiate between which is more solid (or dense), when considering water and wood than it is to differentiate between gold and silver. It is easy for a group to agree that the difference between leaders and managers is that one is more visionary and proactive and the other is more short term, maintaining the status quo and is very reactive. But it is more difficult for a group to identify if a person is either a leader or a manager without a lot of data, and without decision making. The Kashiwagi Solution Model (KSM) uses the principles of alignment, extremes, and dominant information (Kashiwagi, 2008). It is a simple two way chart, identifying the different characteristics of people who are extremely visionary or extremely "blind," non-changing, and reactive. The KSM assumes that all things are relative and related. By using extremes, it is easier to align which characteristics are highly related or aligned, and which characteristics are more incompatible.

Addressing cultures, a highly developed country is more like to have a greater level of the following characteristics than an less developed country: Hofstede (1980, 1989, 2005), Hall (989), Swartz (1994, 1999), Trompenaars (1997, 2004), Chang and Ding (1995), House *et al.*, (2002).

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| 1. Education and training levels. | 9. Stability. | 17. Accountability. |
| 2. Standard of living. | 10. Consistency. | 18. Gross Domestic Production and Gross National Production. |
| 3. Technology. | 11. Efficiency (professionalism). | 19. Capability. |
| 4. Personal wealth. | 12. Performance. | 20. Experience. |
| 5. Job opportunities. | 13. Reliability. | 21. Healthcare. |
| 6. Opportunities to advance. | 14. Accountability. | 22. Conveniences. |
| 7. Choices. | 15. Maintained infrastructure. | |
| 8. Values (moral discipline). | 16. Professionalism. | |

A population of a less developed country would have lower levels of the above characteristics. Other characteristics (the dual or opposite characteristics) would have greater levels. For example:

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|------------------|-------------------------------------|------------------|
| 1. Crime. | 6. Devaluation of currency. | 10. Waste. |
| 2. Graft. | 7. Relationships. | 11. Poverty. |
| 3. Collusion. | 8. Hierarchy and Class distinction. | 12. Confusion. |
| 4. Unemployment. | 9. Communicable diseases. | 13. Bureaucracy. |
| 5. Inflation. | | 14. Management. |

By using the dominant characteristics above, the authors identify the US as a highly developed culture, and Botswana and neighboring South Africa, as less developed in terms of construction culture. The following is a comparison of the above attributes for the two extreme cases.

Table 1: Extreme Cultural Measurements

Characteristic	Botswana	USA	RSA
Murder per capita		0.04/ 1000 people	0.50/ 1000 people
Control of corruption	0.81(World Bank,2006)	1.30 (World Bank, 2006)	0.56 (World Bank, 2006)
Unemployment	17.6% (CSO, 2008)	7.2 % (Tradingeconomics.com,2009)	23.2 % (Statistics SA, 2008)
Inflation	15 % (Bank of Botswana, 2008)	1.10 % (Tradingeconomics.com,2009)	
HIV AIDS rate	26.6 % (World, Bank, 2006)	15.6 % (World, Bank, 2006)	0.4 % (CDC, 2006)
Poverty	47 %	11.7 % in 2001 (U.S. Census Bureau, 2007)	57 % in 2001 (Schwabe, 2004)

6. Hypothesis

After going through the discussion of deductive logic, the authors propose that both culture and delivery system must contribute to poor construction performance. Regardless of the culture or level of the culture, improvements to the culture can be made by improving the delivery system. The delivery system improvement should have a bigger impact to the underdeveloped culture due to the lack of resources to expend. There also may be a connection between culture and delivery system stability, but the researchers will bypass the analysis of this potential connection for now, and concentrate on how the delivery system can improve the culture in terms of efficiency, value, and increasing of technical skill. The case will be made that the developing countries have far more need for a stable delivery system than a very developed country. The discussion will also try to show that a developing country needs to build an “in-country” capability to improve, instead of creating a dependence on outside consultants and contractors.

The authors are therefore proposing that introduction and implementation of a stable delivery system in an underdeveloped culture has the capability to change the culture in terms of efficiency, accountability, and value. There is a unique requirement. Normally more efficient delivery systems require more technical understanding and expertise. Also the biggest risk is that the stable delivery system only works in developed countries. The authors propose that this may not assist in increasing the culture and construction industry performance because the system would require outside management and control. When management and control is exercised, the local workers and organizations will not be motivated to change. The authors will use a technology that is very different. It requires less technical experience, using deductive logic and simplistic models instead. By using simple technology, the authors propose that a stable delivery system can be implemented and sustained in a less developed country. The new stable delivery system must be able to be sustained by the level of culture in the developing country. Thus is if the stable delivery system requires technical expertise which must be brought in from developed cultures, the implementation may not be sustainable. This would require the “in-country” experts to be just as expert as the experts from the developed cultures. Having assistance from experts from the developed cultures is fine, but the actual system cannot require the “in-country” experts to have a technical background that comes with the more developed culture experts.

7. Methodology

The following methodology is being used to identify if Botswana should use a stable delivery system:

1. Identify that Botswana is an underdeveloped culture.
2. Identify that the US, European, and UK cultures are very developed.
3. Identify that the underdeveloped country may not be able to afford to misuse their limited resources.
4. Identify that both the delivery system in the developed and underdeveloped cultures are unstable.
5. Identify a stable delivery system by proven performance.
6. Test the receptiveness of the underdeveloped culture to the stable delivery system by implementing a number of tests and education sessions in the underdeveloped country.
7. Test the stable delivery system in the underdeveloped country.
8. Look at different cultures at extreme ends of development, identify cultural differences, and see the relationship with delivery system stability. Analyze and conclude the characteristics of the stable delivery system that will allow for implementation in the underdeveloped country.

8. Problems with Unstable Construction Delivery Systems

The developed countries (US, UK, Netherlands) have problems with: collusion; management based direction; poor performance; very few bona fide training centers for craftspeople; union organized pipefitters, sheet metal, and electrical training sites are few; unions who have the only legitimate training centers are losing their dominance; the number of highly trained people is diminishing; and most people are trained on the job (Doree, 2004). Their delivery system is broken. The industry structure/delivery system is not sustainable and stable. The best example is the UK, where PPP, PFI, and latest cutting edge processes to minimize transactions were supposed to result in very high construction performance and value. Instead they have the following results:

1. Fewer contractors can do the PPI, PFI, and other deviations.
2. Partnering (a price based practice of getting GC and subcontractors together with the client’s representatives) is still required.
3. The performance of craftspeople is not increasing.
4. The number of highly trained personnel is decreasing.

In 2008, they discovered one of the biggest collusion cases with the largest UK contractor involved with over 100 other contractors (Wearden, 2008). This contractor is the major player in the building of the Olympic venues. Industry experts think this is only the tip of the iceberg.

This follows on the heels of the five year collusion arrangement in the Netherlands (Doree, 2004). In the US, the same kind of relationships are formed by other delivery processes. This includes construction procurement with a lack of competitive bidding or pricing (State of Arizona design-build and CM@Risk construction laws) and design-build where the general contractor is selecting contractors through relationships and paying more than the competitive price (unpublished analysis of roofing). If the construction delivery system is not a true best value with all of the following characteristics, it will not be sustainable and it will not be stable:

1. Transparency.
2. Application of measurements of performance of general contractors, critical subcontractors, and key individuals in terms of on time, minimized cost change orders, and client satisfaction to increase construction performance.
3. Transfer of risk and control to the contractor, where the client does quality assurance, and the contractor does quality control.
4. Performance on the project affects the contractor's future competitive nature.
5. Performance measurements on all the critical components including site superintendent and project manager, and critical subcontractors.
6. Preplanning and measurement of deviation during the project by the contractors with justification for the deviation.
7. High competition. Collusion is caused by low competition and low profit margins.

As discussed before, collusion occurs when the level of competition and opportunity for profit is minimized. Unstable procurement systems in developed countries produce the following characteristics (Kashiwagi, 2002):

1. Low profit margins and high risk.
2. High turnover.
3. Lack of experienced managers and craftspeople.
4. Lack of training programs that raise the level of quality.
5. Big demand for project managers, construction managers, and inspectors.
6. Lack of performance measurements that accurately identify the performance of contractors, suppliers, and critical individuals such as project managers and site superintendents.
7. Poor performance (on time, no contractor generated cost change orders, high client satisfaction)
8. Lack of preplanning.
9. Lack of accountability.
10. Award based on price.
11. Collusion.
12. Use of minimum standards.
13. Dependence on contracts instead of high performing vendors.
14. High dependence on legal entities and documents.

The delivery systems of both the developed and underdeveloped countries have produced these characteristics. An unstable delivery system will decrease the value of any culture by diminishing the factors of value. The unstable, unsustainable delivery systems have a more negative impact on the culture of the underdeveloped country than on the developed country for the following reasons:

1. The developed country has greater resources.
2. Higher education level.

3. More personal wealth.

9. A Stable Delivery System

The Performance Information Procurement System (PIPS) has been identified as a stable delivery system (Muatjetjeju, 2009). It has all the characteristics defined previously. PIPS has the following test results (Kashiwag, 2009; www.pbsrg.com):

1. 611 tests, \$528M of construction services, over 15 years
2. 98% customer satisfaction
3. Minimized up to 90% of construction risk management
4. Allowed vendors to increase their profit without increase in costs
5. Testing outside of construction on \$2B of services with outstanding results
6. Published in Engineering News in 2006, and 2008, the International Project Management Association PMForum in the July, August, and October 2008 website and presented at the International Project Management Institute annual conference in 2007 and 2008.

PIPS has been highly successful in the United States, but tests have been confined to research partners of the Performance Based Studies Research Group (PBSRG) including the State of Oklahoma and Arizona, Arizona State University, University of Minnesota, University of New Mexico, Boise State University, and the University of Idaho. Clients also include United Airlines, Schering Plough, and manufacturers in the Phoenix area. Federal clients include the US Army Medical Command, the US Air Force, and the Corps of Engineers (Michael, 2008; Sullivan, 2007). PIPS has also been successfully tested in the Netherlands over the last three years. PIPS concepts have also been implemented in Finland. PIPS has not been tested in the UK. And, PIPS has not been tested before in an underdeveloped country.

PIPS was introduced to Botswana, and the University of Botswana (UB) Project Management Section in September 2008, integrated into the Masters of Project Management (MPM) course on Assessment, Monitoring, and Evaluation (MPM 655), and introduced to the industry in October 2008 (Kashiwagi, 2008). The concepts are also being integrated into other courses including a Risk Management course, A Quality Control class, and a Procurement class. The Bank of Botswana, the Botswana Development Corporation, the US Embassy, and the Department of Botswana Engineering Services (DBES), the primary delivery service of construction for the Botswana government were approached and showed tremendous interest. Two of the research clients, the US Embassy and the Bank of Botswana are now conducting PIPS tests.

This is the fastest implementation of PIPS in any new environment (US, UK, Europe, Australia, Malaysia, or China). Due to its quick implementation (when compared to even areas in the United States), the authors are encouraged that the stable delivery system may be simple and logical enough to fit within the culture of an underdeveloped country. If this works, and provides a way to not have to establish the traditional system which requires years to establish the technical expertise of clients, it could have real impact on the construction performance and the culture of the country. The University of Botswana research team and the clients seem to understand the model, understand that the delivery system is a stable delivery system, and has the potential to improve the value of the delivered service. The sustainability of the delivery system is still a question, as the test proceeds into the second six months.

10. Conclusion and Recommendations

The authors have shown that it is difficult to define culture. They also have shown that the different cultures can be defined using relative characteristics of wealth, education, opportunity, stability, and

efficiency. The authors used the extreme comparison between the cultures of the US, UK, and Europe, and Botswana. The authors also showed that a stable delivery system which is characterized by efficiency, transparency, and value, would increase the level of culture of any country. It also showed where the construction delivery system in the more developed countries was still unstable, and if practiced in Botswana would result in the same relative results. The authors propose using a stable delivery system that fit within the lower technological culture of the Botswana. The difference between the status quo approach to improve Botswana and this approach is that this delivery system is proven to be stable in the developed countries, whereas the status quo approach has not been proven to be stable. The only question is that the system is also stable in an underdeveloped country, which as of yet has not been proven. The authors propose that the deductive explanation in this paper has been presented to major clients in Botswana, and they have given preliminary acceptance. Tests are now underway. The research will continue, and the research team will document test results, sustainability of the efforts with the clients, whether the UB research team can integrate the ideas in their graduate research, conduct research with the industry, and convince the industry to use the stable delivery system.

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