

Best Value PIPS Research Reaches Malaysia

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Abstract

Brunsfeld, one of the largest developer/contractors in Malaysia, has entered into a three year arrangement with the Performance Based Studies Research Group (PBSRG) at Arizona State University to utilize the best value PIPS environment to raise their already efficient organization to the next level of performance. Brunsfeld has been a major contractor/developer for one of the largest land owners in Malaysia. Brunsfeld has been able to capture efficiency and supply chain thinking to deliver 33% faster than most contractors, minimize the cost of construction, increase the value of development 10 times the normal development, and deliver at a defect rate of .04 defects per unit (100 times less than the normal defect rate.) Brunsfeld is now planning to increase their production without minimizing any of their performance. To go to the next level, Brunsfeld is doing best value research with PBSRG to implement the best value environment in their supply chain to make their performance and value generation sustainable over a longer period of time through efficiency and alignment. This paper will analyze why Brunsfeld made such a commitment despite their own expertise and high performance, how PBSRG identified that this was a good research fit, and lessons learned in how to improve university construction management research programs, which can assist to improve the Malaysian construction industry.

Keywords

Brunsfeld, Best Value Environment, Construction Industry Research

1. Introduction

The Performance Based Studies Research Group (PBSRG) has been active in trying to bring the best Performance Information Procurement System (PIPS) technology to Malaysia since 1996. In 2006, 2007, and 2009, the technology was presented to the Malaysian academic community and the construction industry through keynote addresses and the presentation of papers (Kashiwagi, 2006; Sullivan et. al., 2007; Kashiwagi, 2009). It is well documented that the Construction Industry Development Board (CIDB) was searching for solutions to improve the results of academic research in the construction industry (Hussein, 2009; CIDB, 2009; Kashiwagi, 2010).

The best value PIPS technology research program brought the following concepts to the delivery of construction services (Kashiwagi, 2011):

1. The price based award forced the wrong party to be managing, directing, and making decisions.
2. The system resulted in a reactive mentality where accountability, quality, and value decreased.
3. Cost increased.
4. The alignment of tasks and expertise instead of the traditional management, direction, and control system leads to increased capability, higher profits and value, and lower costs.

5. The majority of personnel in the construction industry are not proactive, do not have the capability to set a plan and minimize deviation to that plan, and cannot think in terms of supply chain value.
6. Best value Performance Information Procurement System (PIPS) is a structure that can minimize risk that non-visionary and inexperienced personnel would normally create.
7. Best value PIPS structure can identify, attract, and motivate the most visionary, expert, and experienced personnel to optimize value, and then can assist the others to minimize risk without having the expertise and vision of the more expert personnel.

PBSRG was convinced that to bring the best value PIPS technology to Malaysia, a host university with a visionary professor would be required. PBSRG could not see any other methodology to overcome the traditional practices with the elegant deductive logic of IMT/PIPS. For the first three years, PBSRG attempted to work with UITM starting in 2006, then USM starting in 2009, and Tun Hussein University in 2009 (Kashiwagi, 2010). The author identified the following issues with Malaysian universities:

1. No university professors had a strategic research plan.
2. It was difficult to jointly plan to develop a research program due to university's bureaucracy.
3. Professors lacked the result oriented approach to work with visionary industry partners.
4. University professors also lacked understanding of the industry structure, the sources for construction issues, and an in depth knowledge of the construction industry supply chain.
5. Professors' teaching and research areas were not integrated, creating added transactions.
6. The inability to use deductive logic, observation, design and run industry tests.

There were not very many options opened to successfully entering and implementing best value research into the Malaysian construction industry research arena. First, PBSRG could continue to work with Malaysian universities to bring the research model into their university research program and mentor professors once the program was setup. Second, PBSRG could act as the research group, and bring the research model directly to the Malaysian industry, and operate without a host university. This was a secondary alternative for PBSRG. This would require an extraordinary industry research partner, one with visionary leadership, high production, the potential to impact the entire industry, and a desire to have the capability to implement the PBSRG model and run their own research.

In 2009, a Brunfield employee was exposed to the best value PIPS technology. A presentation was held at Brunfield headquarters (Brunfield, 2009). In 2010, a four person representation from their top level strategic planning committee, attended the annual Best Value PIPS education conference in Tempe, Arizona. Two subsequent visits by Kashiwagi in 2010 into Brunfield's main office, and a visit by the CEO Dato Gan and his executive team to PBSRG at Arizona State University in November 2010, resulted in a three year research agreement between Brunfield and the Performance Based Studies Research Group (PBSRG) at Arizona State University by the end of the calendar year of 2010. Four meetings (eleven days) in a year, with Brunfield also attending a four day annual conference (five days), resulted in the three year research agreement.

2. Brunfield

Brunfield is one of the largest contractor developer vendors in Malaysia. They are one of the main contractor developers for one the largest land owner in Malaysia. The following attributes identify Brunfield as a visionary vendor:

1. Increased value 10X the normal value by use of the most innovative design, development, construction and supply chain concepts (internal study in 2010.) Brunfield believes that during times of prosperity is the best time to invest in research.
2. Even with two down cycles in the construction industry, they have increased their production and value generation through both cycles.

3. Coupled the concepts of supply chain value, risk minimization, and alignment of expertise.
4. Delivered construction faster and at a lower cost than other contractors.
5. Defect rate is 100% below other contractor's work at Darby.
6. Implemented visionary practices of BIM and re-useable lightweight form work.
7. Practice concepts of accountability, planning, and quality.
8. A CEO who believes in change. He believes change has to be made during successful times.
9. Controls the entire supply chain from development to facility/property management. Used a worldwide strategic sourcing plan.
10. Takes an annual worldwide trip with their executive staff to visit other countries to find new concepts and values.
11. Only contractor who believes that the presentation of their value is one of the most important factors in their supply chain.

Brunsfeld's unique characteristics of constant improvement, change, searching for and adopting successful ideas, and having a worldwide vision, make them an excellent research partner for PBSRG.

The objectives of Brunsfeld before meeting PBSRG was to:

1. Create a structure/environment within Brunsfeld that will allow the increase of production without increasing risk of nonperformance or lowering the quality of Brunsfeld developments.
2. Improve the technical capability of Brunsfeld by finding more expertise and augmenting the Brunsfeld expertise.
3. Create sustainability by attracting visionaries into Brunsfeld, creating a training/mentoring system within Brunsfeld that does not deter from the existing operations.
4. Improve efficiency and value generation that will differentiate Brunsfeld in the next generation.

Brunsfeld's need for change is due to their leader's expectations to continually improve value, performance, and increase production. Unlike other contractors who may have performance issues due to a lack of capability, Brunsfeld's problems were being caused by self imposed expectations of increased production without an increase in risk. Brunsfeld's philosophy is to set a higher expectation and then find the solutions that will deliver the expectations.

3. Best Value Concepts

The authors define best value as an environment which is measured, transparent, minimizes relationships, decision making, risk, unneeded transactions. The best value environment also utilizes proactive and preplanned activity and alignment of expertise rather than management, direction, and control by upper management. It requires systems approaches to maximize the value of expertise. Performance Information Risk Management System (PIRMS) was created for the US Army Medical Command in 2007, to distinguish the application of the Information Measurement Theory (IMT) from a "procurement" process to a risk management/project or systems management approach (Chong, 2007).

Best value identifies the construction inefficiency issue as a systems problem and not a lack of technical expertise. Best value PIPS proposes a system to align expertise, minimize decision making, create and implement optimal plans, and manage and control the plans by minimizing time and cost deviation. Best value also identifies experts who need less time to observe and identify project initial conditions and aligning them with positions that create value and minimize risk.

4. Best Value Research

The objectives of PBSRG research is to determine:

1. Is it possible to do research with impact in the Malaysian construction environment?

2. Why did the academic research community previously not assist Brunnsfield in achieving its goals?
3. What made PBSRG different?
4. What is the future of the Brunnsfield - PBSRG relationship and strategic plan for Brunnsfield?
5. What will be the impact of the best value implementation of Brunnsfield on the Malaysian construction environment?
6. What is the impact of the Brunnsfield research program on PBSRG?

The objectives of the Brunnsfield effort included:

1. To expose Brunnsfield to the IMT/KSM theory.
2. To identify a methodology to dominantly increase Brunnsfield's production.
3. To implement the best value PIPS process in the delivery of design and sub-vendor services.
4. To implement the weekly risk report (WRR) and risk management plan (RMP) to force preplanning, coordination between different departments, and the tracking of deviation.
5. To identify if the best value PIPS structure could increase the visionary capability of the current and future Brunnsfield leadership and project management core.
6. To identify an education and training program that can sustain the visionary leadership of Brunnsfield.
7. To identify a methodology to have senior leadership obtain their masters and doctorates in best value delivery.
8. To identify if and how the best value PIPS system could assist in the strategic development of Brunnsfield.

5. Methodology

PBSRG is running parallel research efforts to answer its research questions. First, PBSRG is continuing to attempt to establish the best value technology into a major university academic research group. Second PBSRG will work with Brunnsfield to try to create a new research model outside of the university system. It is the intent of the research, that the answers will come from both analyzing the difference between the two models as well as direct observations from the results of each effort.

6. Brunnsfield Research Effort

The strategic plan for the Brunnsfield research effort is to create the capability to increase their productivity to the next level, and to be able to have the research capability that will be able to support a continually improving production/value.

Why did the academic research community not previously assist Brunnsfield in achieving its goals? Brunnsfield was already looking for a solution to increase their high quality production. The duration of the Brunnsfield research grant was for three years. Brunnsfield also paid a license fee to ASU for the best value Performance Information Procurement System (PIPS) technology. The research grant was the largest single research commitment that a Malaysian contractor has made to a single university research group for construction management/leadership expertise and a best value structure. Brunnsfield and their visionary leader, took a risk in making a commitment with PBSRG.

ASU PBSRG showed the following to Brunnsfield:

1. 17 years research experience working with industry partners.
2. Documented results and performance.

3. Expertise with the industry structure and Information Measurement Theory (IMT) which the Brunfield visionaries quickly accepted as accurately representing the industry environment and some of their own strengths and weaknesses.
4. Ability to quickly propose solutions which were logical and doable.

By not partnering with any Malaysian academic research group to develop new construction management practices, the following can be concluded:

1. No Malaysian university program had the capability to understand and solve Brunfield's expectations.
2. University research groups lacked the expertise to improve supply chain issues, strategic sourcing, property development/marketing, and facility management issues.
3. Brunfield itself, had systems in place that superseded what Malaysian universities were teaching and developing.
4. Malaysian university research groups were too slow moving and bureaucratic to assist Brunfield.

After partnering with Brunfield, PBSRG has tried to interest other major academic research groups to participate in the research. PBSRG encountered some of the same issues that Brunfield encountered. PBSRG has also encountered the same issues at U.S. and European construction management research universities.

7. What Made PBSRG Different?

PBSRG had an explanation for the problems (industry structure analysis) and a solution (best value Performance Information Procurement System (PIPS)) that would give their entire supply chain higher production and value. PBSRG had the capability to give full service in theoretical development, prototype testing, and implementation of the concepts within Brunfield. PBSRG had past performance information on their research results showing dominant impact in the construction industry (PBSRG, 2010; PBSRG, 2011). PBSRG was willing to put solutions in place and be accountable for the results. PBSRG also proposed how they could increase production/value by using a systems solution that did not require Brunfield to use more technical expertise or change their people. The PBSRG solution was doable, holistic, and had been previously tested successfully. Brunfield could see the value in the PBSRG solution, due to simple, dominant explanations and recognized the potential of the technology could exceed the conservative PBSRG proposals. Brunfield recognized that PBSRG's researcher was visionary, quick processing, and fully accountable. Brunfield also recognized that PBSRG was the worldwide expert in best value environments, was enthusiastic and a highly successful research unit. Brunfield has concluded that PBSRG is a different type of university research program.

This is not the first time research clients had stated this fact. The GSA went through a competitive process in 2009 to find a vendor to implement a best value environment. Their conclusion was that PBSRG was the only vendor who could (Meyer, 2010):

1. Deliver a system that would minimize transactions.
2. Deliver a fully measured system.
3. Had past performance of the system.
4. Was accountable for the performance of the system.

GSA contracting agent and project manager identified PBSRG as the only vendor possible to deliver on all points, and also recommended that a sole source contract could be written. The Western States Contracting Alliance (WSCA) came to the same conclusion, and is in the process of writing a sole source contract between WSCA and ASU. NEVI, the Dutch industry procurement group, is also considering having a relationship with PBSRG and ASU. ASU has issued 24 licenses on the Information Measurement Theory (IMT) and the Performance Information Procurement System (PIPS). Arizona

State University itself has used the technology to deliver over \$3B of services, with a return of over \$100M over ten years.

8. What is the Future of the Brunfield - PBSRG Relationship and Strategic Plan for Brunfield?

PBSRG's overall strategic plan is to optimize the delivery of construction and other services. The methodology is to implement the best value PIPS/PIRMS to accomplish the following:

1. Minimize decision making.
2. Accurately identify personnel capability and augment the capability with a structure that results in high performance results.
3. Optimize the supply chain to minimize transactions.
4. Assist buyers to get higher value for their funding and requirements.
5. Improve the technical performance of professionals and contractors.
6. To provide an environment where expertise is identified, where expertise can be competitive in price, and where experts have the competitive advantage.
7. To create transparency in an environment which uses the alignment of expertise instead of management, direction, and control to minimize risk and add value.

The Brunfield research opportunity is seen as a huge step forward in achieving PBSRG's objectives. Brunfield is led by a visionary who commands change, is committed to education and the latest technologies, and has turned a subcontracting company into a high performance developer/contractor company within ten years. He has a very lean management group, can implement change quickly, controls their entire supply chain including their financing, and has high performance sub-vendors (professionals, subcontractors, and material and system suppliers.) Every principle of IMT and PIPS will be exercised in the next three years. Brunfield, being a Malaysian contractor, is in the Malaysian construction industry in a developing country. This adds a level of complexity. PBSRG hopes to influence major Malaysian university groups to participate in the Brunfield project and learn the PBSRG research techniques and business model. What will be the impact of the best value implementation of Brunfield on the Malaysian construction environment?

Brunfield is a major user and buyer of services of Malaysian designers/engineers, subcontractors, and suppliers. All suppliers to Brunfield will be asked to learn the best value model. Brunfield services, and other owners and participants with Brunfield will eventually learn the best value model. As Brunfield creates the best value environment, they will impact the entire supply chain. Brunfield will also continue to educate university interns, and will look to form a very close relationship with a visionary university to create an education/training program for the best value PIPS environment.

9. What is the Impact of the Brunfield Research Program on PBSRG?

Brunfield will become the PBSRG/CIB W117 platform in the Pacific Ocean area. Brunfield is the first opportunity for PBSRG to investigate the entire supply chain, including development, design, procurement, construction, and facility management. The work with Brunfield will be the first implementation of best value into an organization structure, recruiting and employment, the use of performance measurements in defining positions and future employment of personnel. Education programs for visionaries will also be developed. Brunfield is also the first research effort in a developing country which has a clear vision of what is to be achieved. This research model may have some far reaching impact on other research programs in developing countries.

In the first year (2011) of the program, Brunsfield attended the annual Best Value conference at Tempe, Arizona with five executives (the second attendance, the first being in 2010). A strategic plan was set to do the following (Brunsfield, 2011):

1. Identify a methodology to dominantly increase Brunsfield's production.
2. Expose Brunsfield employees to the IMT/KSM theory.
3. Implement the weekly risk report (WRR) and risk management plan (RMP) to force preplanning, coordination between different departments, and the tracking of deviation.
4. Identify an education and training program that can sustain the visionary leadership of Brunsfield.
5. Identify a methodology to have senior leadership obtain their masters and doctorates in best value delivery.
6. Implement the best value PIPS process in the delivery of design and sub-vendor services.
7. Identify if the best value PIPS structure could increase the visionary capability of the current and future Brunsfield leadership and project management core.
8. Identify if and how the best value PIPS system could assist in the strategic development of Brunsfield.

In March 2011, the author visited Brunsfield for two weeks and achieved the following (Gan, 2011):

1. Applied an IMT/PIPS concept to dominantly increase Brunsfield's potential production. This application will be in another paper.
2. Expose Brunsfield employees to the IMT/KSM theory.
3. Educated and set a goal to implement the weekly risk report (WRR) and risk management plan (RMP) to force preplanning, coordination between different departments, and the tracking of deviation on all existing projects. This will be followed up in the next visit in July 2011.
4. Identify an education and training program that can sustain the visionary leadership of Brunsfield. This education/training program uses the concepts of IMT, and goes against the traditional educational/training program concepts which Brunsfield was using.
5. Identified a methodology to have senior leadership obtain their masters and doctorates in the best value environment area.

A second visit is planned for July 3-16, 2011. Brunsfield is the fastest moving research project tackled by PBSRG. It is a very aggressive private company, where change is a way of life. The future potential is that Brunsfield, despite being in a developing country, may be the greatest benefactor of IMT/KSM and the PIPS/PIRMS technology. They may also have the greatest influence on the industry and government agencies due to their ability to deliver on time, and on budget.

10. Conclusion

The Malaysian Construction Industry Development Board (CIDB) has had a difficult time finding and funding research from university research programs that add value to the construction industry. Many reasons have been given. The results from this test show that the industry may be correct. The objective of this research was to confirm the above proposal. In 2009 PBSRG found Brunsfield, and in a year Brunsfield made the decision to sign a three year research agreement with PBSRG at Arizona State University. By observation, the following can be identified:

1. If an academic research group has a research capability to help a contractor in the Malaysian construction industry, they can obtain research funding.
2. The Malaysian construction industry has at least one contractor led by a visionary leader who is very interested in improving their organization and supply chain using forward thinking ideas.
3. Theoretical concepts, prototype testing, and implementation of systems can be applied simultaneously by a research group.
4. Research funding by the industry is quick and can have high impact.

5. The construction industry is a peer review for the quality of the university research. If the industry funds the research, the research has value. If the industry does not continuously fund the research, the research has no value.
6. PBSRG was able to contact Brunfield because it has research capability that has dominant value.

The actual research results of the ongoing effort will be captured in another paper. Further research should be done to assist university research programs in Malaysia to gain the capability of doing research in the delivery of construction services.

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