

LESSONS LEARNED FROM TWO PFI ROAD PROJECTS IN THE UK

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ABSTRACT: PFI is an extension of the policies to shift the paradigm of government from public administration to public management; and its real aim is administrative reform and its main mission is to transfer much of the public sector's role to the private sector in infrastructure construction and service provision. The PFI is not about borrowing money from the private sector. It is all about creating a structure in which improved Value for Money (VFM) is achieved through private sector innovation and management skills delivering significant performance improvements and efficiency in service delivery. An important feature of the introduction of any new procurement process is learning from past experiences. This paper presents the critical feedback from two PFI Road Projects in the UK identifying the key messages from conception to operation. Learning from these key messages should improve the 'bankability' of future PFI road projects and ensure that all stakeholders benefit from the iterative learning from the projects.

Keywords: Innovation, PFI, Risk Management (RM), VFM, Whole-life Cycle Costing (WLCC)

1. INTRODUCTION

Private Finance Initiative (PFI) is an economic concept; it is not a rule. It is used as a means of involving the private sector in the construction of public infrastructure. Under PFI the private sector is no longer required simply to construct an asset but, is required to finance, build and operate a particular asset, providing a service to the public sector. The public sector changes role from 'service provider' to 'service specifier' and the private sector changes from 'asset provider' to 'service provider'. Service provision for a 30-40 years concession period entails change in both public and private organisational cultures and organisational learning. Both parties have to move into a long-term relationship creating an organisational structure which provides a framework for the establishment of mutual objectives among the public and private parties which inspires honesty, trust, openness and co-operation. The private sector no longer constructs a traditional project but moves into a new and pluralistic business culture in a consortium. The private sector consortium has different project objectives, experiences and learning in different organisational levels namely, corporate level, company level and project level. The *corporate level* deals with the 'strategic objectives' which questions what the Public Sponsor wants to achieve from the long-term relationship; the *company level* deals with the 'functional objectives' which questions what the project will do for the Public Sponsor; and the *project level* deals with the 'procurement objectives' which questions what are the cost, time, quality and certainty required by the Public Sponsor. These three levels are interrelated and influences both the learning and the decision making process in a PFI project. This article concentrates on the 'project level'.

2. PROJECT LEARNING

A constructivist approach to learning creates the expectation that there are many ways in which to enhance what one knows and what one is able to do; and has provided much of the foundation for experiential learning theory (Lyons, 2004). Possibly the most established model of experiential learning is that of Kolb (1984). In Kolb's Model, the process of learning starts with an experience and is followed by reflection. The reflections are then incorporated into a conceptualisation. Finally the conceptualisation is applied in new situations. The systematic retention of project experiences enables a company to compare its various projects more systematically and document its most effective problem solving mechanisms (Schindler and Eppler, 2003). From a long term perspective, systematic project learning enables the company to develop project competencies that lead to a sustainable competitive advantage (ibid).

We believe that it is the people that perform the interaction between tacit and explicit knowledge, not the organisation. In order to utilise this knowledge it has to be shared. Knowledge transferring and sharing in the organisation is a competitive advantage. Therefore it is absolutely necessary to create a culture in construction projects that:

- Identify, formalise and share the best practices;
- Acquire new knowledge and develop knowledge data bases in its organisational memories for future use.

3. LESSONS LEARNED FORM PFI PROJECTS

A PFI project is divided into a number of separate phases. The management of risk is a continuous process and should span all the phases of a project. According to Jackson (2004) a major feature of the PFI process is that risks are identified and costed. The key assumption is that the PFI process will act as a catalyst to ensure that risks are more effectively allocated between the public and the private sectors (Treasury Taskforce, 1997). It is of the utmost importance that the public sector should not automatically seek to transfer all risks to the private sector but the public sector should only transfer a risk when it can obtain Value for Money (VFM) by such a risk transfer. There must always be an association between value for money and risk transfer in PFI deals. Value for money and risk management are two key concepts of PFI. Illidge and Cicmil (2000) state that the intended complementary merger between the value for money objective and the idea of transferring project risk to the party best able to handle it has been an ideal solution to the persisting problem of escalating costs and uncertainty in public sector capital projects. The notion that PFI contracts transfer risk from the public sector to the private sector has been seen as one of the advantages of the use of PFI deals. Transferring risks to the private sector frees the taxpayer from unnecessary burden, creates a greater incentive for the private sector to deliver to budget and on time, and when they do, benefits the citizen-the consumer of the services (Smith, 2001).

The combination of an *integrated approach* involving a long-term collaborative arrangement, careful division of tasks and risks, an *output oriented contract*, scope optimisation, public procurement and a payment mechanism based on the quality of the service delivered, is a guarantee of better value for money and is what distinguishes PFI from other forms of public private collaboration (Johannisse and Coenen, 2000). PFI project knowledge needs to be integrated into the stakeholders' business strategy and organisational culture. Otherwise the person based project knowledge will disappear with the person when he/she disappears from the project and when the project ends. The PFI road projects can be divided as far as the lessons learned into three phases: The first phase is the '*negotiation phase*'. The second phase is the '*design and build phase*'. The third and final phase is the '*operation and maintenance phase*' or '*service provision phase*'. We divide the lessons learned into two broad issues, namely '*soft issues*' and '*hard issues*' for two case study projects, one in Scotland and the other in Wales in the UK. The Scottish project is a rural

2x2lane highway approx. 20 km long currently under construction with a 30 year concession and in Wales is an urban 2x2 project approx. 10 km long recently completed, with a 40 year concession. The new works construction contractor for both projects is the same company; the Concession Company – Special Purpose Vehicle (SPV) and Lenders are different. Both projects have Local Authorities (LA) as Public Sponsors. We do not have any information about the Operation and Maintenance period yet.

3.1 Soft Issues: From three workshops undertaken with the design team, structures team and road works team and other staff interviews the following lessons are learned:

- Openness and Proactive design approach;
- Keenness for problems solving and Good decision-making;
- Working towards a common goal and Flexibility to take on different ideas;
- Well developed line of communication and No hot heads;
- Pre-award enabled considered decisions and six months advanced work;
- Excellence in management identified proactive problem solving approach, common goal, commitment, responsiveness, wide perspective (taking on board different factors such as commercial and programme);
- Value and support achieved by integrating the design and construction team;
- Design process iterative awareness for programming and planning consideration;
- Early identification of Granting Authority issues;
- Honest teamwork and Problem solving together;
- Supportive senior management – no closed doors;
- Early Solutions Together (EST) : Organising before doing (pre-emptive), reducing risk (right first time, reducing costs, company reputation), getting ahead as early as possible, solutions from people made them feel good to contribute, focus on end product, alignment of efforts with diversity of ideas in team working and supporting.
- Whole picture of safety, cost, time, people, Client and Collective Gain – Common Incentive;
- Poor understanding of partnering (lack of understanding and skill to operate within a partnering environment at all levels, not appropriately engaging stakeholders, lack of development of team culture between different stakeholders, inappropriate corporate support for the project team in partnering, many organisations and management styles and company cultures, lack of managerial skills for partnering in all stakeholders);
- Lack of skills to differentiate between task and process in complex and collaborative projects. There was an overwhelmingly heavy task focus and a limited focus on relationships or process which may support the organisation in dealing with effects of culture change;
- Misperception and lack of commonly held view of what constituted partnering (partnering is about challenging everything, not participating in a nice comfortable arrangement) and a Reluctance to invest much time and money in developing the process (this is a key challenge within the industry); The early partnering workshops were of limited success, because there was no follow through process;
- There has not been a whole view of the project, just construction; There has been a failure to recognise and learn from mistakes at numerous levels, there has been no formal process of learning,
- There was little collective understanding, responsibility and ownership to manage the risks, too much time and money has been placed on establishing the contract, without enough time thinking about working together, the objectives and operational issues (anomalies in developing the right team balance between structure, skills and awareness to effectively deliver the project);
- Unresolved issues between CJV (Construction Joint Venture) and SPV (Special Purpose Vehicle). There has been a whole series of agendas being played out, which have not been aligned with each other; The Public Sponsor (Client) has established an approach which does not properly support or enable effective project partnering;

- Lack of recognition and understanding the limitations of the existing company culture and how this needs to adopt to better operate within the challenges of a new working environment; The Project Board members suffered from a lack of skills and awareness of working as a collective Project Board (knowing how to behave, think, appropriate attitudes and how to challenge); During Board Meetings there was rarely anything about problems – this may have been because the Public Sponsor expected a nice convivial environment.
- There was no collective and whole project view of the project; just construction; Relationship issues, internally and cross companies limited the effectiveness of collaborative working;
- A complex contract established by the Public Sponsor, which has been ineffective at developing a proper project partnering culture, there was lots of covering the interests of ‘my own company’; little consideration of the whole project interest;
- There was little collective understanding, responsibility and ownership to manage the risks and Risk was almost always passed to CJV (Construction Joint Venture);

3.2 Hard Issues

- Innovation & Value Engineering;
- Sustainable Solutions;
- Time Savings;
- Re-Engineering the Road;
- Early Contractor Involvement;
- Quality Management;
- Predictability of Cost Control;
- Construction Programme.

Innovation has been encouraged throughout the scheme with both the Designer and Steel Work Fabricator being given incentives to generate innovative solutions. An agreement is also in place that details the share for Public Sponsor and Project Partners of savings made through value engineering. The use of value engineering and innovation has resulted in approximately £1M savings on the Public Sponsor’s original illustrative design. Examples of innovative solutions developed are; Changed deck on the bridge (used composite deck instead of baffle); Shortened viaducts and incorporated reinforced earth; Substantial reduction in the capital expenditure for statutory undertakers work due to value engineering and design opportunities.

A rigorous self certification process has been implemented to ensure that all inspection and testing requirements are met. The CJV will meet the zero defect target required at handover stage and that Permit of Use will be issued on programme.

All eligible changes (cost increases) are discussed with the Public and value engineered before execution. The strategic partnering agreement between CJV and the Surfacing Contractor allowed for a fixed price to be negotiated at tender stage, with a fixed, highly competitive level of inflation indexation over three years. This fixed price provided cost certainty. Capital expenditure and maintenance costs were considered throughout the various bidding stages in order to arrive at an effective whole life costing for the 40 years + 10 years residual life of the project.

The *co-location* of the project team and several supply-chain partners has facilitated *regular interface* and *efficient decision-making*. Partnering arrangements and existing relationships with the supply chain have engendered project focus ensuring delivery of programme. The relationship between the supply chain and the Designer has also enabled the identification of opportunity to reduce cost and time. The *use of recycled and secondary aggregates* guaranteed security of supply and non-dependence on quarries. This minimised

traffic movement through the route and minimised traffic disruption. The collaborative approach to problem resolution enabled the most cost effective solution without detriment to the programme. Four revised programmes have been produced to incorporate the effect of changes to the project.

Table 1: Total Savings of Early Contractor Involvement in NSDR

ISSUE	EXPLANATION	SAVING/COSTS
(a) Design Issues	1. Modification of embankment design and re-programme approvals and construction.	£ 750k
	2. Refine pavement design based on additional site investigation works.	£ 250k
	3. Re-engineer Corporation Road Junction with Council's team by avoiding need for full grade separation.	£ 1M
	4. Modify culvert designs	£ 350k
	5. Option selection review with Council to select between signal controlled junctions and roundabouts.	-
	6. Refine Council's outline to improve buildability and programme for the River Usk bridge.	£ 1 M
	SUB-TOTAL Design Issues	£ 3. 35 M (6. 09 %)
(b) Use of Re-cycled Materials	1. Maximise use of project-derived and locally – available recycled materials to produce <i>direct cost saving</i> (per tonne of aggregate) and <i>indirect cost saving</i> (from the avoidance of the waste disposal charges and landfill tax).	£ 2.00 M
	SUB-TOTAL Recycled Materials	£ 2. 00 M (3. 64 %)
(c) Commercial Arrangements	1. Re-engineer statutory undertakers' works and negotiate improved commercial arrangements with undertakers and their contractors.	£ 1. 00 M
	SUB-TOTAL Commercial Arrangements	£ 1. 00 M (1. 82 %)
	TOTAL SAVINGS of Early Contractor Involvement	£ 6. 35 M (11. 55 %)

Results:

The Project Team has proactively driven the above explained creativity, innovation and continuous improvement throughout the procurement and construction process resulting:

- To better the Public Sponsor's completion programme by approximately 8 months;
- £6.35M total savings and value adding in the scheme of early Construction Joint Venture involvement (breakdown shown in Table 1 above);
- Award of the George Gibby Award for the Usk Crossing Bridge by the Institution of Civil Engineers in Wales;
- Winning of the Green Apple Award for sustainable construction and crowning as National Champions for Environmental Best Practice in the Building and Construction sector.

4. CONCLUSIONS

It is clearly demonstrated that the 'soft issues' are far beyond expectations and the partnering philosophy and collaborative working is not yet fully understood in PFI road projects. Although the construction industry has been experiencing significant cultural changes in working practices there is still much to do in filling the gap in lack of skills and awareness of how to behave in a collaborative working project environments. It has been obvious that people experienced difficulty in understanding and operating effectively within a team working culture and lacked communication and co-operation skills at all levels of the organisation of all the stakeholders. The non-adversarial intention of PFI have been accepted and well applied by the stakeholders. The partnering philosophy between the private and public sectors went far beyond expectations.

On the so-called 'hard issues' the construction contractor was very successful in delivering innovative and sustainable solutions, earlier completion, value adding and considerable cost saving to the projects. Hard issues satisfy fully all the stakeholders' needs and expectations of a PFI road project. Through these two projects we can conclude that problems and issues inevitably arise when the procurement route and contract conditions change and elements of the conventional procurement route culture become out of step with the needs of a new working environment that needs honesty, openness, trust, communication, team working, sound inter-group relations and common objectives.

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