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Barriers to Innovation in Public-Private Partnership (PPP)

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Barriers to Innovation in Public-Private Partnership (PPP)

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Abstract

This paper sets out to identify barriers to greater use of innovation in PPP projects. Using a series of in-depth interviews with participants on two closely related PPP projects, data were gathered and analysed to compare the success of the projects in relation to innovation. The views of the participants relating to the approach to innovation were recorded and were examined relative to the views on innovation expressed in published documentation relating to these projects. The research showed that two different types of innovation could be identified – namely cost reducing innovation and product enhancing innovation. It also showed that, despite a stated desire to introduce both types of innovation, the systems that are in place for procuring PPP are focused only on achieving innovation objectives of the cost reduction variety.

Key Words: Innovation; PPP.

1. Introduction

The objective of the paper is to establish barriers to greater use of innovation on PPP projects. This paper is prepared as part of a research project that examined the effectiveness of PPP as a mechanism for delivering public facilities and services in Ireland. The research specifically focussed on projects that were released as part of Ireland's Pilot Programme of PPPs between 2000 and 2004. In this paper, the issue of innovation is addressed through the examination of two schools projects. The paper begins by outlining the background to this research and defining the questions that must be answered in order to address the objective. It then establishes a strategy for gathering and analysing the required research data. The actual data gathered is analysed and the barriers to greater use of innovation are established.

2. Background

There is a widely held view that private sector involvement in public service provision should prompt the use of innovation in construction in a bid to maximise the financial return over the whole-life cycle of the project (Chi et al., (2003), Domberger & Jensen (1997)). Such innovation might be introduced to:

- reduce construction time, realising savings in construction overheads whilst bringing the facility into use earlier thereby achieving early generation of income;
- reduce operation and maintenance costs;

- maximise further opportunities for use of the facility thereby generating extra future income.

Whilst there is evidence of innovation in Private Finance Initiative (PFI) schools (Eaton et al., 2005), the findings of UK Audit Commission (2003) revealed no difference in use of innovation between PFI schools and those procured by traditional means. In addition, Hurst and Reeves (2004) contended that the extent of the Output Specification left little room for innovation in the Irish Grouped Schools project.

In this research four key questions must be addressed if the objective of this paper is to be realised. Firstly, what innovation was actually achieved? Secondly, what was the purpose of the innovation? Thirdly, by whom was it initiated? Fourthly, how effective was its use? Following from such an investigation, the barriers to innovation will be identified.

3. Developing a Research Strategy

In assessing the achievement of innovation, the Construction Industry Council (2000) gives guidance on innovation in the context of PFI and suggests that innovation can be classified as either product-enhancing or cost saving. As cost savings are defined as savings over the entire project life-cycle they include quality improvements that would improve availability of the facility, would enhance durability and reduce running costs. Product enhancing innovations occur when a higher quality product is provided for which the client is prepared to pay a higher price. This gives a clear distinction between two types of innovation that are possible and gives a context in which the first two questions can be addressed. By examining cost-saving innovation in terms of the party that would benefit most, the third question is put into context. Innovation will therefore be assessed against these categories with the cost savings split to show whether they accrued to the DOES or the SPV, as shown in Table 1.

Product Enhancing
Cost Saving
To DOES
To SPV

Table 1: Innovation Categories

To gather the data required to address the questions, two schools PPP projects were selected for analysis. Data relating to the existence of actual innovation-related objectives on each project and to the achievement of these objectives through observable project outcomes, would be gathered. This data

would be required to identify the objectives and the outcomes relating to innovation on the chosen projects. Such data is contained in a number of reports on these projects have been prepared, the most widely known being that by the Comptroller & Auditor General (2004) relating to the Grouped Schools project.

The following internal government reports relating to the projects were in preparation at the time of this research and their authors were available for interview:

- the DOES PPP Unit's Internal Report into the Grouped Schools Pilot Partnership Project;
- the DOES PPP Unit's Internal Report into the Maritime College PPP Project;
- the Project Agreement between the DOES and Focus Education for the design, construction, financing and maintenance of the National Maritime College Project.

The review of these documents would concentrate on the extent to which benefits of innovation were identified and action was taken to maximise the benefit of innovation to the project as a whole. The following procedure was established for quantifying the extent to which innovation was evident. Using a marking scale of 100, the first 30 marks would be allocated on a sliding scale reflecting the degree to which innovation was considered central to the project.

The remaining marks are divided as follows:

- 3 marks for each innovation category identified, up to a maximum of 30 marks. The marks are allocated on the basis that 3 indicates new thinking in the design of a school in Ireland, 2 indicates a change in thinking relating mainly to keeping overall costs down and 1 indicates a change driven by cost to one party only;
- 4 marks allocated on a sliding scale against each category where 4 marks shows substantial evidence of benefit to the project as a whole, 3 shows noticeable benefit to both the school/DOES and the SPV, 2 shows benefit to one party only, 1 shows limited benefit and 0 shows that no benefit was achieved. A maximum of 40 marks can be allocated against the benefit of innovation that has accrued to the project.

A full measurement sheet was developed for this exercise.

In addition, four people - the DOES Project Managers and the Consultant Advisors who were directly involved in the projects - were interviewed to establish the extent to which innovation was considered at the outset of the projects. These people, two each from the DOES team on each project were asked to assess the extent to which innovation was considered through their responses to the following questions below. The responses were then rated as shown.

Question	What is being measured?	Analysis - Responses scored on a graduated 1-5 scale as follows:
1. *What were the objectives relating to innovation?*	The participant's awareness of the level of importance attached to innovation by all project partners	1- no clear objectives 2- some objectives relating to own organisation only 3- clear objectives relating to own organisation only 4- some joint objectives 5- clear comprehensive joint objectives
2. *Which potential innovations were identified?*	The participant's knowledge and understanding of the innovation-related issues that were considered on this project by all parties.	1- knowledge of innovation limited to that relating own organisation 2- some innovation issues for other party identified 3- most of other party innovation issues identified 4- some joint innovation issues identified 5- comprehensive knowledge of joint innovation issues evident.
3. *In your view, which innovation-related issues were identified as critical to project success?*	The extent to which the participant was open to examining value from a project perspective rather than from an organisational perspective	1 - concentration exclusively on innovation-related issues that was critical to own organisation 2 - some realisation of innovation-related issues critical to other party displayed 3 - considerable awareness of innovation-related issues for other partners displayed 4 - openness to discussion of some areas where joint innovation-related issues exist 5 - clear view that innovation-related issues at a project level must be identified by the partnership as a whole
4. *In what way issues critical?*	The participant's ability to clearly justify critical issues relating to innovation	1 - displayed reaction only to innovation-related issues that were critical to own organisation 2 - displayed some reaction to innovation-related issues that were critical to other party 3 - significant consideration of innovation-related issues for other partners displayed 4 - consideration of some joint innovation-related issues evident 5 - clear view that innovation-related issues at a project level must be addressed by the partnership as a whole
5. *What processes were used to identify potential for innovation on the project?*	The participant's disposition towards action in analysis of innovation at a project level	1 - concentration exclusively on innovation-related issues relevant to own organisation 2 - some disposition to action in analysis of innovation-related issues relevant to other party displayed 3 - willingness to analyse innovation-related issues of other partners displayed 4 - involvement in analysis of some joint issues related to innovation 5 - clear evidence that project level innovation-related issues were analysed by the partnership as a whole
6. *What process was used to manage the use of innovation?*	Further behavioural question designed to assess the participant's disposition to action in the management of value at a project level	1 - concentrated on innovation-related issues that related exclusively to own organisation 2 - influenced management of some issues through discussion with other sector partner 3 - Made some suggestions that would bring benefits of innovation to other sector partner 4 - Made several suggestions to bring benefits of innovation to both sectors 5 - Open forum whereby use of innovation was managed by the partnership as a whole

4. Field Research

The research, beginning with a review of the available documents prior to a series of interviews with the relevant authors, was carried out during the Summer of 2006. The relevant information gathered was them extracted and filled into the measurement sheets (Tables 2 & 3).

Project: No 1

Degree to which Innovation was considered	**Marks Available**	**Marks Allocated**
Very comprehensive approach to Innovation evident	30	
Structured approach to Innovation	24	
Specific but limited targets for Innovation	18	18
Some Innovation considered	12	
No evidence of Innovation Strategy	6	

Potential Innovation identified	**Marks** (Max 3 per category)	**Benefits achieved**	**Marks** (Max 4 per category)
Greater potential use of space through the provision of a building shell with few internal load bearing walls	3	Greater flexibility in the use of the building, particularly in relation to potential changes that may be required of the building in the future	4
Increased circulation space	3	Calmer movement of students throughout the school resulting in less breakages	3
Provision of lobby areas outside classrooms	3	Further increases the ease of movement by taking pupils off the corridors prior to class commencing	3
Greater use of day lighting	3	Gives an airy feel to the buildings which appears to contribute to a calmer atmosphere in the school. Reduces costs of artificial lighting	3
Greater use of adjacencies	3	Results in greater use of preparation space for practical classes and less distance travelled by pupils between classes Change in DOES Specification for conventionally built schools	3
Use of high insulation roofing material	2	Results in lower maintenance costs, and lower possibility of leaks than in traditional tiled roofs. Better sound insulation. Better heat insulation resulting in saving on energy costs Change in DOES Specification for conventionally built schools	3
Use of hardwearing flooring materials	1	Reduced life cycling costs to SPV	2
Use of fair faced block work	1	Eliminates repainting costs to SPV	2
Use of newer design in school furniture	2	Less breakages resulting in lower maintenance costs to SPV Change in DOES Specification for conventionally built schools	2
Use of sturdier materials generally	2	Less vandalism (e.g. in toilet areas), resulting in lower maintenance costs	2
Total innovation rating expressed as a mark out of 100			**68**

Table 2: Innovation on Project 1

Project: 2

Degree to which Innovation was considered	**Marks Available**	**Marks Allocated**
Very comprehensive approach to Innovation evident	30	
Structured approach to Innovation	24	
Specific but limited targets for Innovation	18	18
Some Innovation considered	12	
No evidence of Innovation Strategy	6	

Potential Innovation identified	**Marks** (Max 3 per category)	**Benefits achieved**	**Marks** (Max 4 per category)
Greater potential use of space through the provision of a building shell with few internal load bearing walls	3	Greater flexibility in the use of the building, particularly in relation to potential changes that may be required of the building in the future.	4
Building designed to accommodate 3rd party use	3	Use of Sports Hall, Catering Area and Main Lecture theatre close to building entrance makes these facilities accessible to 3rd parties with minimum disruption to the facility as a whole.	3
Heat generating functions located in the centre of the building	3	Greater reduction in heat loss contributing to objective of production an energy efficient building.	3
Greater capture of light arising from the direction that the roof lights are facing and heat energy efficiency from the ceiling design	3	Reduces costs of artificial lighting and contributes to objective of production of an energy efficient building.	3
Greater use of adjacencies	3	Results in better use of simulator suite and the adjacent break out rooms. Also results in less time spent by students travelling from room to room.	3
Use of high insulation roofing material	2	Results in lower maintenance costs, and lower possibility of leaks than in traditional tiled roofs. Better sound insulation. Better heat insulation resulting in saving on energy costs. Change in DOES Specification for conventionally built 3rd level colleges.	3
Use of hardwearing flooring materials	1	Reduced life cycling costs to SPV.	2
Use of fair faced block work	1	Eliminates repainting costs to SPV.	2
Use of newer design in furniture	2	Less breakages resulting in lower maintenance costs to SPV. Change in DOES Specification for conventionally built schools.	2
Site locker areas in open spaces off corridors	2	Reduces the number of students on the corridors thereby increasing general circulation space while reducing wear & tear on the corridors.	3
Total innovation rating expressed as a mark out of 100			**69**

Table 3: Innovation on Project 2

Each of the participant interviews were recorded and transcribed. The participant responses were rated as shown in Tables 4 & 5.

	INTERVIEW 1	Rating	INTERVIEW 2	Rating	Total
1 What were the objectives relating to innovation?	**Cost Saving Innovation** Operator to ensure that the facility delivered was fit for purpose whilst reducing running costs over life of the project. Becomes a saving for the DOES where this contributes to generating a lower tender price. DOES did not set any specific Cost Saving Innovation objectives for SPV. **Product Enhancing Innovation Objectives** Gather information on new building practices, use of new materials and use of school furniture/equipment with a view to modernising the specification of traditionally procured schools.	5	Revolved around the quality of the build, the circulation space (which was to be increased by up to 30%) and getting a higher standard of IT into the schools. Cost Saving Innovation was an issue for the Operator and it was important that the Operator be allowed to incorporate such innovations.	4	9
2 What potential innovations were identified?	Decided by the management of the DOES PPP Unit.	2	Guidelines for corridor space and circulation space were under review by the PBU at the time.	1	3
3 In your view, which innovation-related issues were identified as critical to project success?	Cost saving objectives must meet fitness for purpose requirements. Product enhancing innovations were important but not critical.	4	All were important, but not critical.	1	5
4 In what way were these issues critical?	If fitness for purpose was not met, the school would be unsuitable and the DOES would not pay for such a facility.	2	It was important to show that using the PPP process could bring a benefit.	1	3
5 What processes were used to identify potential for innovation on the project?	Product enhancing innovation was openly examined due to the pilot nature of the project. This allowed the DOES to deviate from the standard internal schools specification.	2	Innovation related objectives arose from question and answer sessions with the bidders and through the bidder liaison meetings.	4	6
6 What process was used to manage the use of innovation?	Increased school size (by 5%) was a requirement in the tender documentation. Other innovation related issues were evaluated by the DOES against the standard technical specification for a school. SPV carried the risk that the facility met the fitness for purpose requirements. DOES did not specify specific innovation requirements.	3	The DOES architects would examine the proposals and satisfy themselves that they were happy with what was proposed.	3	6
					Σ32/ 60

Table 4: Interview Responses - Project 1

	INTERVIEW 1	Rating	INTERVIEW 2	Rating	Total
1 What were the objectives relating to innovation?	**Cost Saving Innovation** SPV to ensure that facility is delivered as fit for purpose whilst reducing running costs over life of the project. Becomes a saving for the DOES where a lower tender price is achieved. DOES did not set any specific objectives Cost Saving Innovation for the SPV. **Product Enhancing Innovation Objectives** To procure a world class state of the art facility for the education and training of Navy and merchant seaman personnel. To gather information on new building practices, use of new materials and use of furniture & equipment with a view to finding better ways of providing further 3rd level accommodation.	5	**Cost Saving Innovation** DOES did not set any specific objectives for the SPV in relation to Cost Saving Innovation, as SPV had to ensure that facility is delivered as fit for purpose whilst reducing running costs over life of the project. **Product Enhancing Innovation Objectives** To find better ways of building third level colleges and to reuse this knowledge in the provision of further 3rd level college accommodation.	5	10
2 What potential innovations were identified?	Energy efficient building.	2	Energy efficiency.	2	4
3 In your view, which innovation-related issues were identified as critical to project success?	Cost saving objectives must meet fitness for purpose requirements. 1st Product enhancing innovation was critical, 2nd was important but not critical.	4	First product enhancing innovation was critical.	3	7
4 In what way were these issues critical?	If fitness for purpose was not met, the school would be unsuitable and the DOES would not pay for such a facility. If the facility provided was not world class it would be difficult to persuade the partners that a jointly occupied facility was a success.	4	If the facility provided were not world class it would not meet the new Navy and Merchant Seamen training standards.	2	6
5 What processes were used to identify potential for innovation on the project?	Addressed as part of analysis of risk and value and agreed within the Project Team. The Project team worked closely with the bidder to make sure that they were clear on the DOES/INS needs.	5	Decided by the DOES PPP Unit in consultation with the PM Team and proposed users of the facility. Close co-operation was achieved in final bid stage on the means by which the objectives would be achieved. The objective relating to learning from the process was set by DOES.	5	10
6 What process was used to manage the use of innovation?	Innovation related design proposals proposed by the SPV were evaluated by the DOES. DOES did not specify specific innovations as the SPV carried the risk of ensuring that the facility met the fitness for purpose requirements.	5	Innovation objectives were embedded in the project documents and issues arising during the project were evaluated by the DOES against the standard technical specification for a school.	2	7 **Σ44 / 60**

Table 5: Interview Responses - Project 2

5. Analysis

For the purposes of this paper, only the interview responses of the four people identified earlier are analysed. As both projects were released from the same office – albeit some months apart – it is understandable that Tables 2 and 3 show no observable difference between the two projects in terms of project objectives and outcomes relating to innovation. These tables also show that a considerable amount of innovation was considered in both projects, with half of the instances recorded showing new levels of planning for innovation. However the remaining half showed that the planning either restricted the objectives to innovation for the purpose of reducing costs only. In relation to the outcomes, approximately half of the outcomes resulted in noticeable levels of innovation to all parties as opposed to substantial levels, whereas the other outcomes achieved a benefit relating to the costs of only one of the project partners or had no noticeable benefit.

The responses in Table 4 shows that on project 1, the DOES is focused very strongly on its own innovation objectives and shows little noticeable disposition to action on project level innovation issues. From the responses given, the DOES is appears to be clear on the cost saving innovation that it wants from the project, but does not appear to be interested in innovation beyond this. The responses in Table 5 below shows that on project 2, the DOES is also focused strongly on its own innovation objectives and but in this instance shows a small level of disposition to action on project level innovation issues, resulting in a higher scoring. From the responses given, the DOES again appears to be clear on the reasoning behind the innovation requirements, but does not display significant interest in innovation beyond that of a cost saving type. As Project 2 was influenced by the experiences gained on Project 1, it is possible that more familiarity with the PPP process could have aided the development of a higher level of thinking relating the innovation on Project 2.

As the PPP Schools Programme is rolled out further, it would be necessary to revisit this research to establish whether or not this apparent increase in level of appreciation of innovation is maintained.

6. Barriers to Innovation

The DOES has been the authority that specified and approved the construction of new school buildings for decades. Moving to a system whereby the DOES would not guide the SPV with a technical specification has required a change in mindset for the DOES. However, a public sector body is always cautious when moving to a new modus operandi and this research shows that this cautious approach has

led to an emphasis on ensuring that cost savings are achieved so that PPP does not cost more than traditional procurement.

The primary barrier identified therefore is the level of caution within the public sector. Clearly, there is political pressure to ensure that the PPP project does not compare unfavourably to the traditional project and cost to the taxpayer will be a factor in political debates. With the public sector partner taking this very understandable approach, the potential for product enhancing innovation has been largely sacrificed although there was some level of thinking of product-enhancing innovation at the outset of the grouped Schools Project. However, there was a small indication that familiarity gained with the process on Project 1 may have promoted confidence when embarking on Project 2. It remains to be seen whether or not further gaining of confidence in the PPP process will lead to further promotion of a level of planning that will result in the achievement of real product enhancing innovation in the future.

A second barrier that is apparent is the lack of a joint approach to setting project level innovation objectives. In the case of the two projects being researched, any innovation that was apparent emerged from either the public sector partner or the SPV. No joint initiative was evident and the SPV was left to its own initiative to develop cost-saving innovation initiatives. The extent to which the DOES benefitted from these initiatives is not clear. The challenge presented in this barrier goes to the heart of the PPP process in that real partnership should capitalise on all of the strengths of all of the partners. Again, with further experience in the PPP process and greater familiarity bringing increased confidence, it would be expected that a higher level of joint planning and action could be achieved.

7. Conclusion

The objective of the paper is to establish barriers to greater use of innovation on PPP through the examination of two schools projects. This examination showed that two barriers emerged on the projects concerned. The first is the level of caution that is apparent within the public sector partner and, to a certain extent, is to be expected in PPP projects that are part of a pilot programme. The second barrier, the lack of a joint approach to setting appropriate innovation objectives, is again to be expected given the relative immaturity of the Irish PPP market at the outset of the projects. It must be stressed that a significant limitation on this research was the lack of PPP projects that had reached operational stage in Ireland at the time that the field research was conducted. As the number of operational PPPs in Ireland has now increased and the PPP programme gains further momentum, further research will be needed to establish whether or not greater experience with the PPP model will lead to barriers to innovation being overcome.

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