

# PRIVATE FIANACE INTIATIVE PROJECT'S FIANACIAL MODELLING

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The number of deals signed with the Private Finance Intuitive (PFI) type of arrangement is growing, where private firms become long-term providers of services rather than up-front asset builders. The financial aspects are mostly driving the decision of bidding, where time, risk, cost of construction and operational process could be interlinked with the cash flow. In the bidding stage, Financial models help to ensure whether the projects can provide an adequate return to the investment or not. This paper reports part of the findings of an ongoing PhD research on PFI financial modelling. The data is based on series of semi-structured interviews with executives in the PFI business. The paper concludes by reviewing the current financial models used in practice and describes the concept of a proposed model that is being developed to assist the project teams to forecast and assess the cash flow of PFI projects at the bidding stage.

Keywords: Private Finance Initiative, PFI, Financial Management, and Modelling

## INTRODUCTION

The UK government is not only encouraging the use of PFI/PPP procurement systems in public projects, but also considering PFI as the cornerstone in its plans to modernize public services and infrastructure. Thus PFI is becoming one of the major procurement systems in the UK and worldwide. One of the most important characteristics of PFI contract is the long-term engagement between public and private sector. The private sector needs to make sure of the visibility of the project before they have to expend any bidding cost that may be wasted if they lose the bid. Prediction of project cash flow will be at the early bidding stage where the information available is based only on the client brief or project output specification.

Financial Models play a very important role in modelling the project financial aspects and make the accurate results to suit client (Public Sector) and provider (Private sector). Just as the engineer's blueprint should reflect how a power plant should be built, so the financial model should reflect the financial condition intended for the project (Walker and Smith, 1995). A model is a representation of a chosen reality (Sherwood, 1983), and a financial model could be defined as mathematical constructs which can be used to help better understand, control, examine, or manage the financial affairs of an individual or institution (Pfaff, 1990).

This paper is part of ongoing PhD research that aims to develop a computer based financial model that will enable project teams to forecast and assess the cash flow of PFI projects at the tendering stage. Exploring the models currently used in the industry to fulfil the same requirements was a crucial step for the research; this was

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to investigate how they work, and to investigate the gaps, which could be covered and treated in order to come up with a comprehensive financial model to forecast the project cash flow and to minimize the bidding cost.

## PFI PROCUREMENT PROCESS

PFI guidance published by governmental authorities (HM Treasury, 1998) define the process of PFI projects in fourteen steps to suite the public sector needs starting from *Establishing business needs, Appraising options, to contract award and financial close and contract management*, as indicated in figure (1) below. The private sector is involved from step 6 where the project should be published in the Official Journal of European Community (OJEC), this announcement should includes project description, information required from bidders about their economic and financial standing, financial capacity and the criteria for award.

In these early stages of the project, both public sector and private sector need financial model, where the public sector typically employs a financial modeller to ensure that the relevant budget constraints (affordability) is matched with the potential scope of the projects needs and the services need to be procured.

In step (3) where an outline business case needs to be prepared, financial model could be needed to help authorities in establishing that the project is feasible under the PFI approach. This includes the development of a ‘Reference Project’ that provides a fully costed combination of capital investment, operations, maintenance and ancillary services.

Biding cost of PFI projects is generally high. Ahadzi and Bowles (2004) found that bidding and advisory costs to both private and public sector to be equally high ranging from £0.1-2.0 million depending on project type. In addition an equally substantial overruns on the advisory and bidding cost ranging 25-200% as a result of the continued retention of advisors by both sides during the protracted negotiations. Models could play a significant role in this stage to reduce the bidding cost prior to decision-making, by testing different scenarios in different circumstances in terms of funding, contracts, revenue, and project overall visibility and profitability.

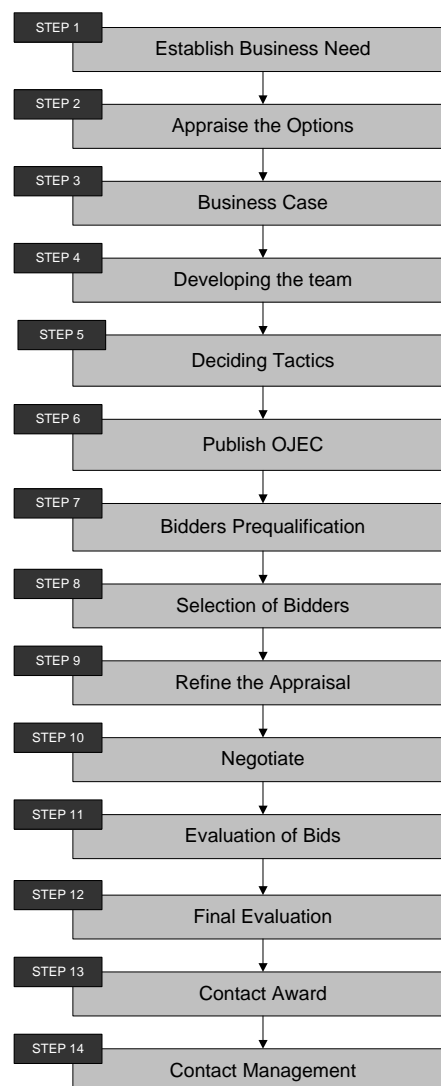


Fig (1) PFI procurement stages

## METHODOLOGY AND OUTCOME

The aim is to investigate and explore the PFI organisations who have experience in PFI projects to document the current use of financial models in such projects, and investigate the gaps in current modelling practice to enable better and more effective model to be developed (research problem justification), to achieve this, either a postal questionnaire survey or face to face interviews could be added as a means of collecting data. Interviewing experts who have worked in the PFI contracts was chosen to be the method of data collection for this research for many reasons. One is the need to contact people directly and get more information about what they use, how it works and what they think about it? Another important reason is the desire of the researcher to see a financial model used in planning or controlling PFI project financial management. By interviews, the potential of achieving that is more than any other survey method.

An invitation was sent to sixteen organisations that deal in PFI contracts, telling them about the research's aim and objectives, and asking to accept interview in the area of financial management and financial modelling. Three accepted the invitation, one was returned because addressee has gone away, and one responded by indicating the nature of the information required was commercially sensitive and could therefore not grant an interview. The exploratory interviews could be minimal, some time more interviewee add nothing to knowledge especially if they use same techniques and follow similar policies, and if the subject is defined, most views are comparable, but with only three acceptance, author seek interviewees by direct contacts or through friends and their acquaintances, this resulted four more acceptance for interview, table (1) shows the total number and categories interviewed.

Category	Invited	Responds	Acceptances	Personal Contacts	Total Interviews
Contractor	5	4	1	1	2
Clients	2	1	1	1	2
Architect / Engineer	2	0			
Quantity Surveyor	2	0		1	1
Legal Adviser	2	1	1		1
Financial adviser	2	0		1	1
<b>Total</b>	<b>16</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>7</b>

Table (1) Interview Invitations and responds

Results of these interviews were very important to the research, showing the current practice of financial models, clarifying how models work and highlighting the gaps those need to be taken in considerations for new models development in this area. The following are highlights of some of the findings:

### Financial models

The importance of computer based financial models in developing the application of private sector participation in providing public projects was raised from all the interviewees, the long engagement contract makes the financial model as the corner stone of decisions making in regards to the agreements and negotiations with all parties, or the main decision whether to bid for the project or not. The models used in modelling the financial aspects of PFI project by either the public or private

sector are based on a spread sheet, no available commercial software packages known by any interviewee, In most cases, financial advisor is the producer of the model and each financial advisor has his own developed model which may differ than what others use, but target the same output. The models available are designed as bidding model to support the decision during the early stage of the project for both public and private sector. In practice, these models are designed to get everything in place for the 'financial close'. They are a lot more complicated than models used to control the financial process of PFI projects in operation stage which are mostly normal accounting and cash flow software that is in other projects.

### **Project costing**

Contractors depend on the superficial area of the project (square meter) to build up their initial project costs. This information comes from the client requirements detailed in the output specification. They start their arrangements for the project using these preliminary numbers to predict the project value and requirements. In parallel, they start the design either by using in-house engineers or by employing a design consultant. The client gives Invitation To Negotiation (ITN) and normally allow 12-14 weeks for proposal submission, this period is short for a complete design documents which lead to accurate cost estimation. FM contractor provides facilities management cost at this stage on square meter for each element of the project by using their historical data and data available from indices like Chartered Institution of Building Service Engineers (CIBSE) Guide for energy efficiency in buildings. The average FM rate is then generated from the total FM cost in relation to the building area. Lifecycle cost is to be provided by the cost consultant as a cost per square meter as a result of the cost of changing elements or conducting building refurbishment work along of the building life.

In estimating the project cost at the early stage, the main cost items are the bidding stage expenditure, construction cost, and facilities management costs, then debt arrangement rollup and diligence cost will be added, with the SVP management cost and the insurance cost as well. The total of these costs will build up the total project cost, and from that the unitary charge could be estimated.

### **How models work?**

Financial advisor will be appointed by the SPV, and will be responsible to provide and run the financial model which should give the results that will be supplied to the client. As showed in Figure (2), The Financial advisor will rely on other parties in providing the financial data needed for the model. The project company (Special Purpose Vehicle, SPV) will provide the initial cost of the project and the SPV management cost, Construction contractor is to provide construction cost on a monthly basis and Life Cycle Cost as well. Facilities Management is to provide operation and maintenance cost (FM cost) in six monthly bases, and Banks to provide the financial information related to the project financing. Financial advisor will collect the data related financing the project, and its related costs from the bank through the SPV, and with all other information, the models will be supplied with adjustments to the number and variables rates to suit the service provider targets.

Models used are commercially very sensitive. They can make a difference to the final bidding offer. By optimising the model, the contractor can make 5-10% difference between the bids of other competitors in relation to the capital value of the project. This gives automatic huge commercial advantage. For a school project

for example, using the financial model can make a big saving (5-10%) to the client organisation and/or substantial margin of profit to the SPV.

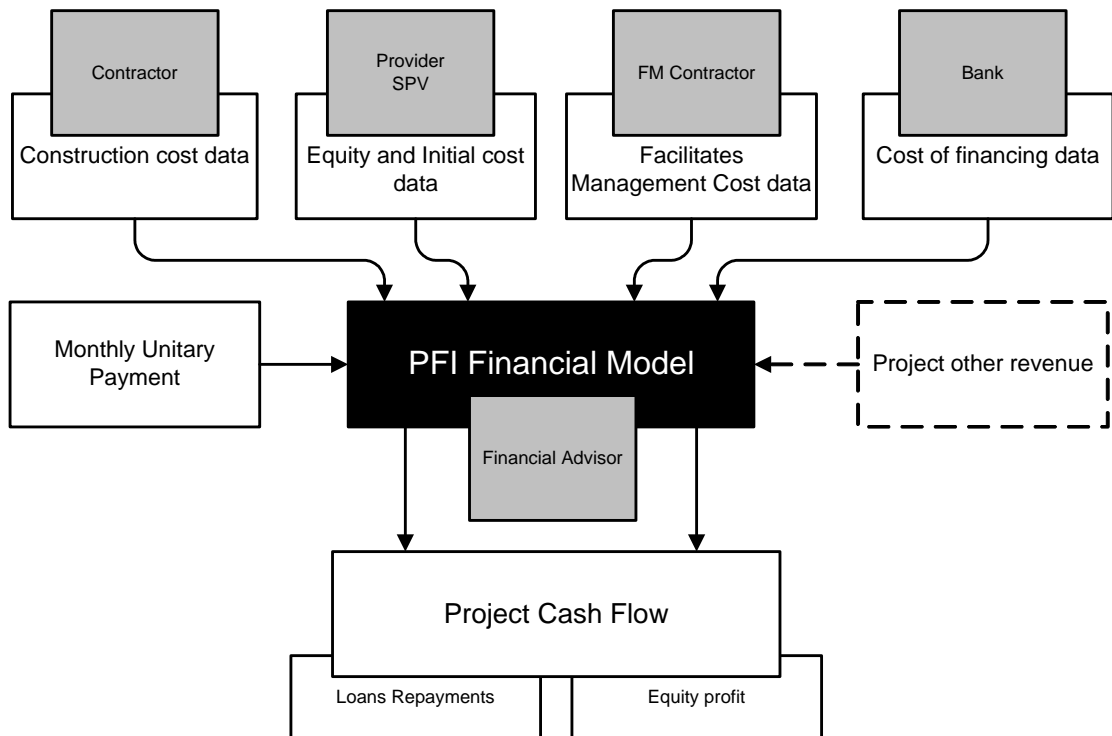


Fig. (2) Current use of financial models in PFI projects

The client will provide data about how much money is available from public sector for the project, normally public sector will provide:

- (1) the first year unitary charge, and
- (2) the over all NPV of the project.

Then the financial advisor will be able to use the indexation provisions in the contract to schedule how much money will be available each year. Financial advisor will feed the model with these inputs, and with the minimum unitary charge that could be accepted by the equity provider, and these inputs could be adjusted in coordination and negotiation with those providing the figures.

### **Risk assessment**

Currently used models have no provision for the risk cost. The cost consultant mostly does the risk assessment. Construction cost normally includes risk costs if the risks are identified, while FM cost will include operation and maintenance cost if applicable to the FM stage. There is no specific line for risk within a bed model. The only time Financial advisor put a particular risk premium within the construction cost would potentially known as a contingency line which is another term for a risk premium.

### **Taxation**

SPV are entities working in the UK where taxation rules should be applied. Models are normally designed to best available tax information, and should be subjected to any taxation change for the project period. Tax change is a risk that needs to be identified and agreed upon, normally, if the changes within the general taxation regime within the UK which affects every one, then it is the SPV risk and they have to deal with it. If the change is considered as a discriminatory change in the tax laws which affects only SPVs or even further like SPVs who are running school projects for example, that could be classified as a council change, and there will be a compensation for the SPV.

### **Inflation**

Inflation is contract specific. Typically, the client would agree to pay a unitary charge which is indexed at a factor that follow Retail Price Index (RPI). This means the unitary charge will be increased annually, then the client will chose wither they are prepared to take the full indexation risk in which case the rate goes up according to RPI, or they can choose to share the inflation increase with SPV.

In some PFI contracts, inflation rate is fixed for the project duration, this makes most of the risk driven to one party depends on increased or decreased value. The client may chose also to pay part of the inflation, for example two third of inflation as RPI to the end of project duration, and this distribute the inflation risk to both party.

## **PROPOSED PFI FINANCIAL MODEL**

Construction industry needs to be more involved either in development or in applications of PFI strategies and processes; the number of PFI signed deals is growing in the UK and worldwide. Biding process, cost, and time span are constraints to construction organisations in biding for PFI/PPP projects. Therefore, developing an automated financial model to be used in the early stages of PFI project could be a tool for decision-making before any major cost commitment to the project.

As mentioned earlier, this paper is about an ongoing PhD research that aims to develop a computer based model to enable project teams to forecast and assess the cash flow of PFI projects at the tendering stage. This will also give the private sector the ability to predict the project profitability and assist in negotiation with their subcontractor as well as the project client. On the other hand, the model will help public sector to establish the potential scope and to develop the reference project.

The model structure as shown in Fig (3) contains four models connected to each other. The plan is to enter the required data in the beginning and each model will calculate the outcome and pass it to the targeted model. Cash flow model will get the (Cash out) items from construction cost model, FM cost model, and from other data entry for other cost items such as initial cost which will be provided by the project company and the cost of financing which will be provided by the bank through SPV. Other data entry of interest rate and inflation rate should be entered as variable. In the other part of the equation, payments data entry should be entered with any other revenue if applicable. The final results should lead to the loans repayments, project profit and the project cash flow behaviour.

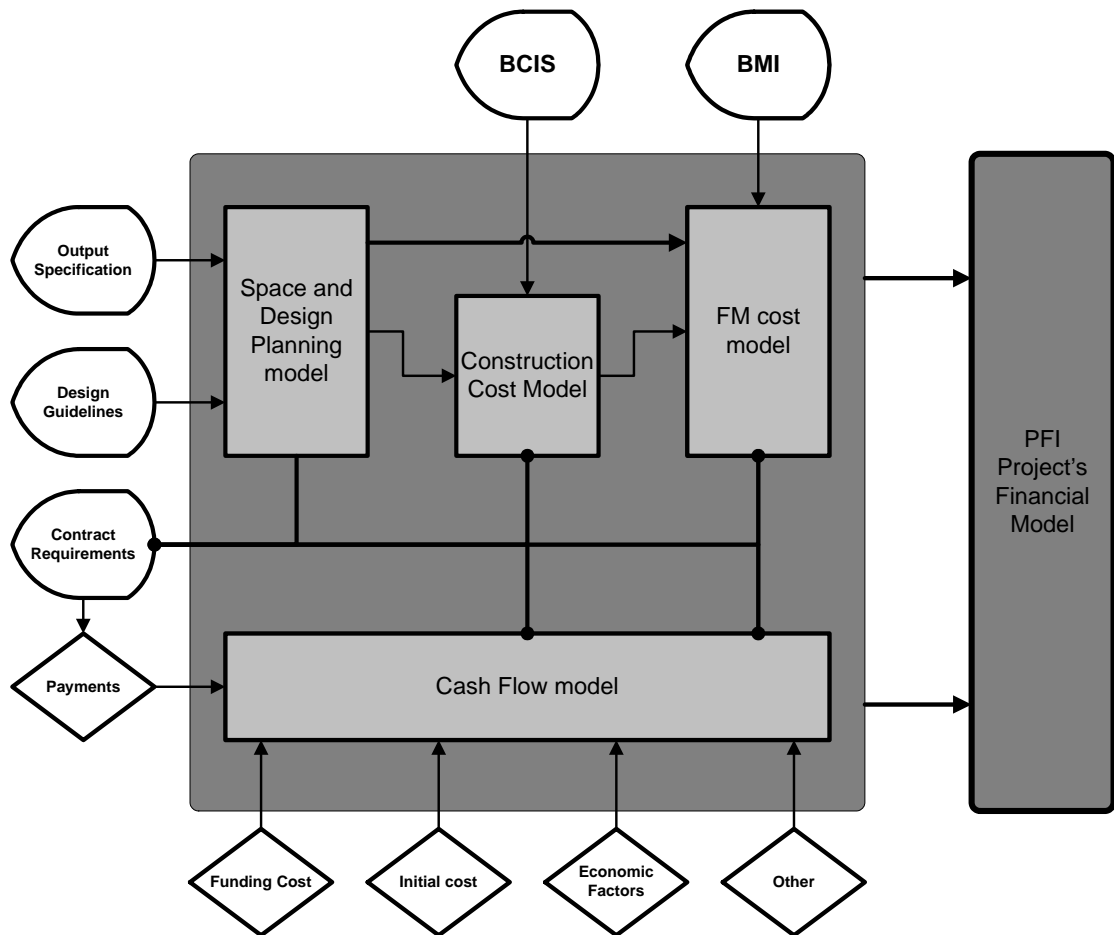


Fig. (3) Proposed concept for PFI project's financial model

The proposed model will be applied on school projects, calculating school net area according to the different zones, and the gross area of the building. There will be a flexibility to enable clients to adjust areas according to their needs and compare it with the recommended school building area. School area will be based on Building Bulletins: Area Guidelines for School which is published to assist clients to develop design briefs to the necessary detail and ensure that the priorities of the school are clearly expressed and can be carried through the design (DfES, 2004 (1) and (2)).

Construction cost model is to calculate construction cost depending on the output of Space planning model, and by using the available information in Building Cost Information Service (BCIS) about schools projects as a data base of historical data. Then Facilities Management (FM) cost will be calculated depending on integrating space model outcome with the data of FM services cost in Building Maintenance Index (BMI), this cost will be indexed for the future cost of maintenance and operation of the building. These costs will be exported to the cash flow model that will calculate the project cash flow using these data and another data entry required to give the accurate forecast.

## CONCLUSION

Computer based Financial models are playing very important role in developing and supporting the use of Private Finance Initiatives (PFI) and other similar Public Private Partnership (PPP) procurements methods. It helps public sector as well as private sector in terms of project evaluation and assessment. With the nature of PFI contracts either in the relations or in the project duration, such models make the impacts of the project clear and predictable.

Cost of bidding and complex financial process of PFI projects could be barriers for most of construction organisations to enter and successfully compete for these projects. Only few big size contractors can offer the cost of bidding for PFI contract, the recent rate for Scotland is 1.7 contractor who bid for PFI project, and although the rate is going a bit higher, the process and cost of bidding for PFI project needs to be simplified. The use computer modelling could help in simplifying these processes and giving the correct prediction on which small and medium size organisations depend for taking the right decision for bidding according to their technical capability and financial efficiency.

Financial models currently used are relay on data input to come from other external organisations, construction contractor will provide construction cost, and FM contractor will provide FM cost, etc. the industry needs an automated financial models to available with the first responsible party in order to give the decision boundaries where clients and projects companies could move toward the contacts.

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