

## AN ASYMMETRIC LEARNING IN COMPLEX PUBLIC-PRIVATE PROJECTS

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**ABSTRACT.** This paper investigates how symmetrical learning activity is, between the public client and the private contractor in the contracting and operation of complex, long-term infrastructure projects. Drawing on empirical material from two United Kingdom (UK) private finance initiative (PFI) cases, the paper analyses differences in the absorptive capacity and learning capability between parties. It suggests the private contractor appears to be better equipped to acquire, embed and renew their learning. These findings reflect less than 5 years of a 30-year contract, suggesting a skewed (imbalanced) relationship, where the contractor gains more learning capabilities than the client. The paper concludes with implications for management practice and suggestions for future research directions.

### INTRODUCTION

Many governments have increased private sector involvement in financing, developing and providing public infrastructure, facilities and services. UK governments have taken a leading role in this development (Confederation of British Industry, 2007) using the private finance initiative (PFI) and public-private-partnership (PPP) as the principal methods for procuring long-term (multi decade) public sector capital projects and delivering associated services (Broadbent & Laughlin, 2005).

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The PPP label covers a number of different arrangements including PFI first established by the UK government in 1992. There is a growing number of European nations (the UK, Portugal and Spain), and non-European countries (Australia and the US), that make significant use of private sector capabilities and capital in a range of infrastructure-related projects such as bridges, tunnels, rails, roads, airports and canals (Confederation of British Industry, 2007; Walder & Amenta, 2004). According to a European Investment Bank report, more than one thousand PPP contracts have been signed in the EU in the last 15 years, representing a capital value of almost 200 billion euro (Blanc-Brude, Goldsmith & Väililä, 2007). These major externalised infrastructure projects demand new capabilities for contracting and managing complex, long-term supply arrangements in both public clients and private contractors. For both sectors managing complex multi-decade projects raises new issues about developing, embedding and renewing key capabilities associated with performing the contract. Therefore, learning is a central challenge in achieving effective public-private partnerships and achieving innovative outcomes from these long-term contractual arrangements.

Whilst a broad literature has developed around some of these issues such as dynamic learning in alliances (Kumar & Nti, 1998), relative absorptive capacity (Lane & Lubatkin, 1998; Cohen & Levinthal, 1990), and learning to build project capabilities (Brady & Davies, 2007), what has been less well developed conceptually and empirically is the assumption that the challenges of making these public-private partnerships work are symmetric (i.e. the same for public and private sector managers). To date understanding of asymmetric capability development in dyadic supply relationships appears to be limited. This paper investigates how the public client and private contractor acquire and embed learning from PFI practice focusing here on when the construction is up and running and the contract is focused on operational delivery. Drawing on work on absorptive capacity (Cohen & Levinthal, 1990), asymmetric development of capabilities is defined here in terms of the learning needed to design, embed and renew factors critical to performing the contract.

In order to access the phenomena of dyadic client/contractor learning in what are complex supply relationships, two parallel

longitudinal healthcare PFI case studies have been investigated. These are both PFI design-build-finance-operate contracts with a 30-year lifespan. Healthcare was selected as the context for the cases due to the fact that the health sector accounts for a significant proportion of the total UK PFI population. To date the Department of Health has signed off 149 projects, with a sum capital value of 6.5 billion (HM Treasury, 2006). In contrast to some other studies the focus is not on whether PFI is an effective or non effective mechanism. Instead PFI is used as a rich context for the research focus on how such a client and contractor manage learning.

The paper is divided into six sections. The following section reviews relevant literature, presenting the conceptual background to the capability and learning literature and a brief overview of PFI/PPPs. The third and fourth sections describe the methodology and case findings. The final two sections present discussion, the main conclusions and implications for future research.

### CONCEPTUAL BACKGROUND

After a brief orientation to the main issues identified in the PPP literature on learning, this section draws upon literature from learning in alliance relationships and learning in complex product systems to suggest two dimensions: absorptive capacity and learning capability that influence learning symmetry in the operational phase of PFI.

#### PPP/PFI as a Learning Context

The wider public private partnership literature of which PFI is a part suggests procuring complex, long-term contracts is challenging due to problems of incomplete (and overly complex) contracts. PFI contracts tend to consist of multiple agreements covering the design, building, finance and operation phases of a project. The problem of an incomplete contract is that the parties cannot specify legally enforceable safeguards for the vast number of future contingencies at the outset of a 30 years relationship (Grimey & Lewis, 2004). Therefore the contract is literally incomplete; different interpretations can easily lead to disputes, which can then become the subject of an expensive legal interpretation in a court of law. The centrality of the issue of incomplete contracts in contracting for complex performance is supported by Argyres, Bercovitz & Mayer's (2007) study of complex IT services contracts. They found contract design strategy to be an

evolving learning process in terms of balancing two key contractual provisions (contingency planning and task descriptions).

Other research suggests the importance of relationship management as a co-ordinating mechanism for intra- and inter-organisational networks that consist of a sheer multiplicity of stakeholders with conflicting interests and values (Tranfield, Rowe, Smart, Levene, Deasley & Corley, 2005; Koppenjan, 2005). Having competence in relationship management also addresses the need for developing dynamic capabilities that can deal with problems in different phases of a relationship life cycle (Hoos, Essig & Glas, 2007). Also, given the multi-decade scale of PFI, the dynamic interplay between contractual and relational mechanism will change over time (Zheng, Roehrich & Lewis, 2008). Lonsdale (2005) suggests post contract negotiations are almost certain in complex procurements such as PFI, and that both parties' relative power will be critical to whose interests are best served by such additional negotiations. Using the principal-agent model, Dunlop and James (2007) first highlight the importance of the principal's learning in terms of reducing information asymmetries but then go on to suggest that the principal's learning on how to select and manage agents tends to be reactive.

### **Learning and Absorptive Capacity**

Of the vast literature on organisational and inter-organisational learning, work that addresses strategic alliances seems best able to inform understanding of the PFI client/contractor relationship. In order to enhance the value of the strategic alliances literature, it is first necessary to engage with that concept of 'absorptive capacity.' Absorptive capacity is regarded as the ability to identify the value of new, external knowledge and information, assimilate it and utilise it to meet new commercial objectives (Cohen & Levinthal, 1990). The ability of a firm to adapt to changing business requirements is viewed in relation to a firm's prior knowledge and experience. The concepts of relative absorptive capacity (Lane & Lubatkin, 1998) suggest individual firms have a unique (and therefore bespoke) capacity to learn. These authors suggest similarity of the partners' basic knowledge, organisational structure, compensation policies and dominant logics may increase inter-organisational learning.

In the context of alliance relationships, Kumar and Nti's (1998) study on differentiated learning in knowledge intensive alliances suggested that whether an alliance partner can achieve its goal depends on its own absorptive capacity and the pattern of interaction among partners. In the field of alliances then, absorptive capacity characterises the ability of a firm to appropriate knowledge that was generated through an alliance relationship. In an empirical work that applied the concepts of relative absorptive capacity (Lane & Lubatkin, 1998), Dussauge, Garrette and Mitchell (2004) found asymmetric performance in the alliance due to unbalanced opportunities for inter-partner learning and learning by doing.

Another challenge in learning is related to developing so called dynamic capabilities that emphasise the firm's ability to renew its capabilities and create innovative responses to meeting the requirements of a changing business environment. Zollo and Winter (2002) propose three different types of learning mechanism for developing dynamic capabilities: experience accumulation, knowledge articulation and knowledge codification processes.

### **Learning Capabilities in Complex Product Systems**

Much research in organisational capabilities and learning in complex product systems (CoPS) appears to focus on the contractor/supplier perspective, not the client. This suggests the firms that are moving to procuring or being a part of, integrated solutions (such as a built and run hospital or any exchange where both a product and the service needed to run and maintain it are provided) need to develop or acquire organisational capabilities related to an integrated solution business model in terms of strategies, their capabilities, organisational structure and cultural changes (Davies, 2004; Brady, Davies & Gann, 2005). In addition, based on research into the strategies of leading suppliers of high-cost capital goods, Davies (2004) identified four areas of new capabilities for integration solution providers: system integration, operation service, business consulting and financing. Furthermore, Davies and Brady (2000) argue firms can capture learning and transfer knowledge from first bids and projects to subsequent bids and projects by documentation, learning tools and movement of staff. However, they suggest that it is more important, for such firms to embed this increased knowledge and experience in the routines,

procedures and IT tools of the wider organisation so that they are not just available but actually used across a large number of projects.

On the other hand, there is very little research on learning to procure complex product systems from a client perspective. Ivory, Alderman, Thwaites, McLoughlin, and Vaughn (2007) examine the ways in which clients can generate, manage and embed knowledge from their suppliers and own organisations in a capital goods projects context. They found problems with managing knowledge across the project life cycle and between different groups with different motivation for creating and sharing knowledge. Briscoe, Dainty, Millett, and Neale (2004) suggest the client can play an important role in achieving a higher level of supply chain integration in construction by proactively influencing supplier co-ordination and through their procurement decision for developing long-term relationships.

### **Summary of Research Gaps**

Extant literature has suggested the importance of capability development for successful procuring and managing complex, long-term supply arrangements. Yet, contextual understanding of dynamic learning processes and their impact on procurement outcome has been less well developed conceptually and empirically. In particular, there is a lack of empirical/longitudinal study of how public and private partners develop, embed and integrate knowledge for strategically managing complex, multi-decade projects. Much CoPs literature tends to focus on supplier's learning and is from an overall or meta level project learning perspective (Davies, 2004; Brady & Davies, 2007). Hence, there is need for research at the level of the dyad. Also, given the operational focus of this study, this paper particularly addresses learning mechanisms/techniques that connect and interact between overall project (strategic) and day to day activity (operational) learning and how these jointly link back into enabling capabilities.

### **METHODS**

The aim of the research was to understand the processes through which the client and the prime contractor utilise learning in managing complex public-private contracts. Given the relatively limited extant literature on PFI (and other complex contractual forms) dyadic

learning, it was decided to undertake an exploratory empirical study. Case studies are particularly useful when exploring new areas of research (Eisenhardt, 1989). Equally, the potential for generating rich qualitative and quantitative data sets are particularly important for studying dynamic processes and issues (Yin, 1994).

Two UK design, build, finance and operate (DBFO) PFI projects for hospital building and facilities service provision were investigated. Hospital case A was among the 'first wave' of PFI healthcare projects in the UK (the late 1990s) while the hospital case B was a more recently started PFI project (this century). In both cases the contract had been awarded to the same private provider (contractor). At the time of the research both had reached the operation phase (see Figure 1). As on-going concerns, these two hospitals case studies provided the researchers with the opportunity to study a dynamic environment where learning capabilities were subject to externalities such as variations in supply market capacities and emerging policy guidance.

### **Data Collection and Analysis**

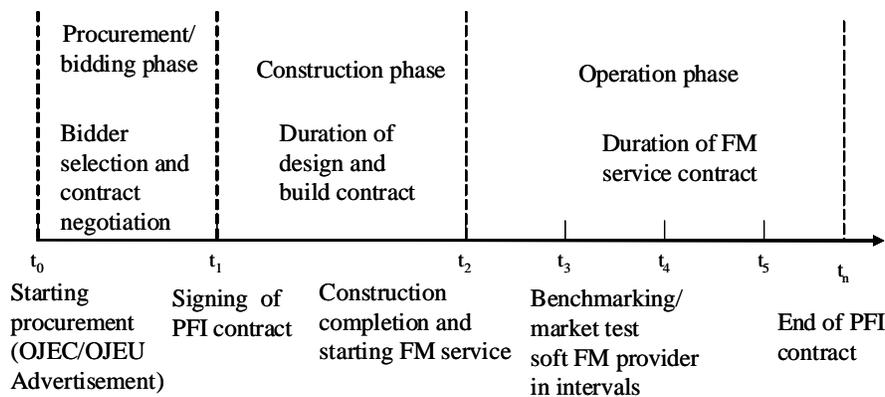
In this study the unit of analysis for examining the distribution of learning is the dyadic relationship between a public client and a private contractor. Over 30 face-to-face semi structured interviews with a range of actors from both sectors (lasting between one to two hours) were conducted over a period of two years. Given the complex network of relationships (often subcontracted to the client or more usually, the main contractor), additional interviews were conducted with key stakeholders such as sub-contractors themselves and relevant government departments to build up a tapestry of insights across the different phases of the projects. All interviews were taped and transcribed, whilst the confidentiality of participating organisations and individuals was assured. Given that these are high profile facilities and services, and are currently operating, individual organisations are not identified by name.

Reliability of interview data was strengthened through triangulation with various reputable central government reports (e.g. HM Treasury and the Audit Commission) which continually review performance in PFI due to both the sums of public money involved and the high profile of the sites and the services performed (e.g.

health, prisons, transportation). In addition, private sector company documentation and reports were consulted.

Various key issues relating to differentiated learning and capability development in managing long-term public-private relationships are explored, including learning to contract for complex performance, internal and external learning, market maturity and the role of individual boundary spanners. Although a longitudinal approach in its pure form, which means following the contract over 25 or 30 years, was impractical, retrospective data was collected using the respondent-driven critical incident technique (Bitner, Booms & Tetreault, 1990; Flanagan, 1954). Although the entire project life cycle is not being explored in this study, critical learning incidents or events perceived by public and private partners were generated and mapped along a timeline. Figure 1 shows a generic timeline for a PFI project. Furthermore, data matrices were used for cross case comparison analysis (Miles & Huberman, 1994) to examine the changing patterns in key contextual variables and client and contractor learning.

**FIGURE 1**  
**Generic Timeline for a PFI Project (with Indicative Key Events)**



## ANALYSIS

This section presents background to the cases and then analyses similarities and differences between them in terms of internal and external learning mechanism and type of capability development. The analysis is based on various public and private partner experiences generated from interview and critical incident data relating to the procurement and operation phases of the two projects.

### Background to Cases

Hospital A is a new hospital, designed, built, financed and operated (DBFO) by a private contractor under the PFI scheme. This hospital facility was built as new on a 'greenfield' site outside of the town. It replaced an old (1959s) town centre hospital. The principle public-private arrangement is a long-term contractual relationship between a single National Health Service (NHS) Trust<sup>1</sup> and a private partner, a company that combines both a building and a facility management (FM) division and also has a separate division for private finance responsible for bidding PFI projects. This concession agreement covers a total of 30 years combined product and service provision, split into two distinct phases. The first phase covered three years of designing and building the hospital, whereas the second phase covers the service provision over a time period of 27 years. The hospital opened at the end of 2002.

Hospital B is a similar size of hospital infrastructure development on an existing 'brownfield' site. PFI was used to design, build, finance and service an extension of the current main hospital. This was in order to re-locate an aging specialist town centre hospital in response to rapidly rising health demands. Similar to Case A, the principle public-private arrangement is a long-term contractual relationship between a single National Health Service (NHS) Trust and a private partner. The public sector organisation NHS Trust was bigger than the one in Case A and was involved in procuring two PFI hospital projects at the similar time. This project was provided by the same private contractor as in Case A and again for a 30-year period of private service provision. It is still in the early stages of the operation phase.

Table 1 provides a comparison of the two hospital cases, illustrating a motif in PFI research, that of continuous change and

**TABLE 1**  
**Comparison of Characteristics of Two Hospital PFI Projects**

	<b>Hospital A</b>	<b>Hospital B</b>
<b>Size of Public Client organisation</b>	Small Trust	Large Trust
<b>Site of PFI Hospital</b>	Greenfield 'new'	Brownfield 'established'
<b>Contract</b>	Bespoke, individual to this project, 30-year contract	Based on Department of Health's standard contract, 30 year contract
<b>Contractor</b>	Same as B, limited PFI experience	Same as A, multiple PFI experience
<b>Market Maturity</b>	Low, few qualified bidders	High, various alternative contractors in market
<b>Time of the Project</b>	Late 1990s	Early 2000s
<b>Client Project Director and Project Team</b>	Turnover of key staff linked to DBFO phases, limited PFI experience	Project Director constant through DBFO phases, highly experienced individual
<b>Central Govt Assistance</b>	Few central governance directives; "first wave" project; steep learning curve for PFU	Variety of procurement/contracting and operation guidance now in place
<b>Contractor consortium structure</b>	Three equal equity investors	Two equal equity investors

adaptation for example, to changing levels of market maturity, changing levels of policy guidance and public-private partner contracting capability.

### **Differentiated Capability**

The cases illustrate different procurement outcomes which at least in part reflect differences in absorptive capacity between individual public and private partners. In Case A, effectively a trailblazer project, the procurement process was prolonged and the concession agreement was criticised by interviewees from both parties for lacking appropriate output specifications.

In contrast to the inexperience of the client Trust project team of Case A, the contractor was the leading player in the emerging PFI market and involved in PFI projects in various sectors. They were at least theoretically able to leverage PFI learning between projects. Also whilst the 'through life' from design to running a construction facility was new to the contractor, their core expertise had always been in construction.

As Case B is a recent PFI, a variety of procurement and operations guidance has been developed in the interim. More importantly, having a strong project team led by an experienced Project Director hugely increased the capability of the Trust in Case B. This individual's previous personal experience in four PFI projects enabled the Trust to go some way to match the expertise of the contractor. Thus in Case B, the project team not only had clear output specifications (i.e. knew exactly what they wanted and what they could afford) but was also able to work proactively with the Contractor. For example in Case B, the Trust tested the market even before the procurement phase started, giving maximum visibility of the forthcoming project which is likely to create a better contractor selection outcome (In itself the capability to market test only comes thorough the client's ability to put together a creditable specification at this early stage). In addition, this Trust project team appeared to be more capable of managing relationships effectively with legal and financial advisors and with the PFU government departments (as shown by their adoption of centrally provided standard contracts for their own situations).

For many years good practice in construction has been acknowledged to include building relationships between client and contractor (Egan, 1998). Both cases show signs of the use of such mutual learning mechanisms to some extent. In the case of Hospital A, both partners appear now to work collaboratively to develop appropriate mechanisms for contract variation procedures and make use of relational approaches by having joint "awaydays". Other joint problem solving mechanisms were reported such as joint workshops and use of joint auditing processes. Such approaches are most promising avenues for symmetric learning.

### **Public and Private Capability Development**

There are examples of learning as a direct result of experiences from Case A. For example in more recent PFI projects, the contractor has avoided triangular partnerships in the consortium company (i.e. three equity investors) in order to maintain better control and higher financial returns. Contractor interviewees spoke of changes in the internal organisational structure in the light of failings in Case A for better co-ordination in servicing their healthcare client. In the NHS Trust of Case A, 'lessons learned' have been taken into account in the contract negotiation for an extension of the PFI project in the creation of a new treatment centre in the hospital. Public sector interviewees commented that they are more able to influence the negotiation processes than in the original project. These evolutions should not be seen as static responses, as they reflect the dynamic nature of the environment and the learning from that environment. For example there are still continual contract variations, and a major 'first' benchmarking/market testing is due at the contract five-year anniversary (see Figure 1). At this junction the contract calls for a benchmarking/market testing processes whereby key elements of the bidding process are compared with the open market to ensure 'fair competition.' Case B will be some way away from this exercise.

### **Internal Learning vs. External Learning Mechanisms**

The cases show different learning mechanisms and therefore different absorptive capacities being deployed in the public and private partners. The private contractor mainly adopts internal learning mechanisms including project-based learning as well as project-to-project learning. For example, critically they can learn from different PFI projects across the firm, and 'parachute' experience as required. In terms of the individual phases, and especially the bidding phase, dedicated teams are kept together where possible, allowing the build up of considerable expertise. Learning and capability building occur when this dedicated project team move from one project to another mainly for the design and construction phase. More importantly, for the contractor PFI business is seen as core to their wider business. The contractor has better internal organisational capacity and resources for management training. For example, there is a regular Health Forum for all concession managers in the company to share their learning experiences as the private partner lead player for bidding PFI project as well as play the role of managing

PFI projects. In addition, their learning is supported by better information and 'hands on' knowledge systems such as a practice based knowledge database and an intranet website.

In contrast, public sector learning mechanisms are more standardised and less bespoke to the individual problem at hand; best practice responses to hypothetical problems. For the public sector client both cases show that the public partner's learning depends heavily on knowledge and expertise held at the sector level such as the Department of Health Private Finance Unit (PFU). Individual learning is ad-hoc and unstructured. On the NHS client side learning is constrained by discontinuity in terms of PFI contracts being one-off (and to the NHS highly unique) projects.

The public sector client cannot offer the career pathway (or financial rewards) a private sector contractor can. Thus the clients in Cases A and B were much more affected by staff turnover than the contractor. As the viability of the PFI concept was established and it was seen to be a long term option, a market for those with such skills rapidly developed and this exacerbated one of the NHS's key challenges: senior managerial continuity. In the Case A, most of the key individuals involved in the early phases of PFI (n.b. in both the client and the contractor) have left their previous jobs. In Case B, interviewee comments on the success of this procurement reflected repeatedly not just on the knowledgeable of the Project Director (PD) and quality of the project team, but also on the continuity of the PD. PD continuity enables capability development throughout the project from procurement to design and build, and earlier stage of operation.

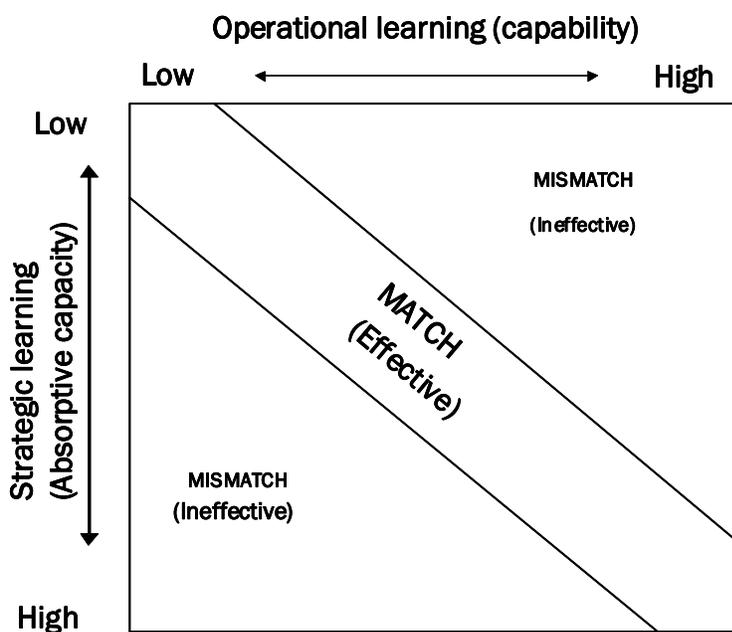
## DISCUSSION

The 20 or 30 year time span of major private finance initiatives means that what might be interpreted as key or seminal turns can be evaluated against a broad canvas of activities. Whilst this research has used methods that stress the topical or high profile (i.e. critical incident technique) the focus in studying learning has been on observed outcomes – signs of change or adaptation in existing practices, structures, goals, personnel, culture etc. We also acknowledge the dynamic nature of the client-contractor relationship and that it is still, and will continue, to evolve.

Based upon the earlier literature review and the findings of our exploratory case studies, this paper develops a preliminary conceptualisation of the problem of symmetric learning in complex product-service projects. It is proposed that there are two key dimensions for understanding the symmetry or otherwise of capability development through client/contractor learning processes in complex, long-term projects. They are: strategic learning and operational learning. The former concerns significant levels of acquiring, embedding and renewing learning activities that lead to enhance absorptive capacity or strategic capabilities; the latter refers to those learning activities that primarily improve operational capabilities, day to day implementation or deployment issues, very much what happens on the ground or 'shop floor'. Strategic learning tends to be associated more with double loop learning (Argyris & Schon, 1978; Bessant & Kaplinsky, 2003) and project-to-project learning while operational learning is limited to single loop learning and project-based learning. In addition, it is proposed that a complex, long-term project is more likely to achieve effective outcomes when strategic learning is aligned with operational learning. Furthermore, this paper suggests symmetric or asymmetric learning in complex, long-term projects is a dynamic process not a static process as it depends on changes in learning capacity and capability in response to rapid changes in political, social, technological and economic environments. Figure 2 shows the graphic mapping symmetric and asymmetric learning and capability.

The case findings indicate that different client outcomes from these two cases are related not only to differences in market maturity and policy guidance available for public sector partners, but also to the differences in absorptive capacity for acquiring and embedding PFI knowledge between individual public and private partners, and between public sector partners. We suggest that in terms of symmetric learning in complex, long-term projects there is a link between the operational learning capabilities and strategic learning/absorptive capacity. Without a mature market (a contestable number of potential suppliers from which to chose) the client lacks learning capability; and the same applies to an absence of policy guidance from central government. For example, in Case A, private sector interviewee comments focused on how unclear the output specifications were (i.e. what exactly they were to deliver). This lack of

FIGURE 2  
Mapping Symmetric and Asymmetric Learning and Capability



clarity reflects how inexperienced the Case A Trust were, how few internal resources were available to them, and how little guidance was available from central government at that time. However as in Case B, when both mature market development and experienced central policy unit, i.e. the PFU, are in place, mutual and aligned progress in learning turns on the ability of the organisation to identify the value of new, external knowledge and information, assimilate it and utilise it to meet new commercial objectives (Cohen and Levinthal, 1990).

In turn the advice available to the public sector client from the PFU is in the form of various expertises such as financing, accounting and law (but much less in operational matters). Interestingly, there is a simultaneous and parallel learning process taking place at this policy unit. In general, there was very few experienced NHS staff at the time of the bidding and contract drafting process. Again it should

be remembered that bidding for and constructing facilities was a core activity for the private sector contractor, whilst the Trust faced a far steeper learning curve both in PFI and in construction. Therefore, whilst the contractor had much operational experience to draw upon, most public sector expertise in PFI appeared to be based at the PFU. However, Case B showed a relatively more balanced capability between public and private partners in terms of experienced project teams, and more importantly, it revealed that the procurement process was perceived to be a relatively more efficient and effective process by both public and private sector interviewees.

Overall, the public sector's capability development appears to be relatively limited, less flexible in response to changing objectives and based on within-project learning. There is relatively poor inter-project learning because an individual Trust typically executes only one PFI project. There is little organisational embeddedness (a reasonable proxy for absorptive capacity) of their learning. Also, lessons learned often narrowly focus on a certain type of operational and technical issues; the ones that can inform future benchmarking processes. There is limited understanding in terms of the future plan of this extended life-cycle infrastructure project. Instead there is knowledge acquiring at the policy level in terms of standard contracts and other different guidance for procurement and operation of PFI projects. For example, the PFU developing standard contracts is based on lessons learned from previous PFI projects. At least in theory, the PFU is more likely to build strategic capability through learning across PFI projects while operational capability development is more certain at the Trust level. These two examples that are somewhat counter to our framework in fact are helpful in reiterating the dynamic and changing PFI (and learning) environment. Just as PFU capability is growing at the time of writing, there is little to stop a new government or new government initiative from reducing or even dismantling the unit.

On the other hand, the private partner in the Case A and Case B gains continuous learning from project to project learning. At the organisational level, they are involved in all three functions (financing, design and construction and service operation). Hence, they are able to improve bidding strategies for subsequent projects from lessons learnt from previous PFI's construction and operation experiences (Davies & Brady, 2000). However, the extent of integrated learning across project phases appears to be limited due to tensions and

different interests between their design and construction division and FM operation division.

### CONCLUSIONS AND IMPLICATIONS

This paper differentiates client-contractor learning in the context of the contractual management of complex, long-term relationships between public sector clients and private sector contractors. The paper has presented the key findings of public and private capability development based on two PFI healthcare case studies in the UK under three major themes: (a) extent of absorptive capacity in terms of three distinct phases of learning (designing, embedding and renewing capabilities); (b) use of internal and external learning mechanisms and (c) factors that influence learning capability such as market maturity, policy guidance and prior experience of Project Director and quality of project team. Our data suggest that absorptive capacity and learning capabilities appear to occur at different levels and different rates between public client and private contractor. In other words, there are various indications of asymmetric learning between the two partners, which is likely to impact upon achieving desired objectives of clients and contractors. Specifically we conclude that the public sector appears poorly equipped to maintain long-term/strategic capabilities compared to the private sector. Turnover of personnel is an issue for both sectors, but the private sector appears better able to embed and therefore retain learning within organisational structures. In contrast public sector expertise appears more tied to key individuals, who move vertically within the public sector rather than horizontally within one organisation. Where the private contractor is at least theoretically able to transfer expertise from one PFI/PPP to the next, the public sector has to rely on more on external factors (e.g. market maturity) rather than enhanced internal capabilities. Public partner learning may depend on more on interaction between Trusts and relevant government departments than internal teams.

#### Managerial and Research Implications

The PPP/PFI model is assumed to have created integrated solutions of mutual benefits to client and contractor. Given a 30-year life cycle (and the sums of money involved) that the client/buyer develops a strategic capability to manage a complex contract is

imperative. Others have noted the risk of creating an effective monopoly with a supplier almost guaranteed 30 years of the work (Longdale, 2005). Hence, these asymmetric learning capabilities have important implications in terms of contracting for effective outcomes and successful operation of these complex, multi-decade projects. From the data reviewed here, an experienced supplier of complex product-service solutions is likely to be able to develop a breadth and depth of capabilities that it can apply to any individual transaction with a potential client/buyer. This ability derives from large multi-project contractors being able to combine the learning from previous projects with the learning from their established base, together with learning from previous bids and negotiations (Davies & Brady, 2000). However, without a more capable public sector buyer (client), little progress is likely in achieving the innovative product-service integrated solution delivery that policy initiatives such as PFI are intended to obtain.

This paper has highlighted a need for further conceptual and empirical work that seeks to understand asymmetric learning processes and their impact on procurement and operation outcome in complex, long-term projects. In particular, further work is needed that addresses how to improve the absorptive capacity/strategic capability in the public sector, manage the horizontal transfer of knowledge within disparate public sector organisations, and manage the interplay between strategic learning and operational learning over time. Also, there is need for better understanding of contextual factors that influence learning and absorptive capacity not only at the level of organisational level as well as societal level (Lam, 2000). The forms of long-term relationships examined here offer an ideal environment for longitudinal case studies that could track in detail changes over the project life cycle.

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### NOTES

1. National Health Service Trusts in England and Wales are not 'legal' trusts but are better described as public sector corporations. Each trust (in this case focused around hospitals) is headed by a board consisting of executive and non-executive directors, and is chaired by a non-executive director.

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