CUSTOMER-CENTRED CONSTRUCTION: BRINGING A SERVICE APPROACH THROUGH CULTURAL CHANGE AND TEAM-WORKING

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Previous research into the Construction Management Process has concentrated on promoting "win-win" partnering, alliancing and Concurrent Engineering. The *BriC* (Building Responsiveness into Construction) team at Cranfield University, working on an Engineering and Physical Sciences Research Council (EPSRC) project, believes that the introduction of the Private Finance Initiative/Public Private Partnership types, superimposes a view of Construction as a Service delivery system encompassing both the delivery of a Real asset plus a guaranteed service over a fixed period of years. However, it seems that the project orientation of the Construction Industry is ill designed to respond to new customer needs. This accent on Service and whole-life management rather than Asset Delivery requires radical re-evaluation of traditional methods of contracting. Responsibility for full life cycle management requires fundamental changes to the project concept. Design for operability therefore becomes of paramount importance when considering the viability of the project. The research team will draw on such concepts as team working, knowledge management, organizational learning and high reliability organizations. By conducting real world case studies the team will formulate its requirements for a prototype methodology to facilitate responsive behaviour.

Keywords: culture, private finance initiative, public private partnership, service delivery focus, teamworking, customer-centred

INTRODUCTION

The authors are currently investigating UK-centred projects, such as Public Private Partnerships (PPP), that are characterized as having a 'Service Delivery Focus' (SDF). Indeed, this analysis also raises issues relating to SDF projects internationally. The subject matter relating to this Paper and the BRiC Project is complex. This is because firstly, there have been many variations in service delivery focused projects around the world; including projects that have no public participation[1]. A second factor complicating analysis is the nascent state of PPP projects where the configuration of UK PPP projects has varied in the light of developing experience. This has meant that case studies of particular projects have tended to be specific to the cases studied. Consequently, further research is needed that will have a more general application and allow the lessons learnt to be carried forward to the Construction industry at large.

[1] For instance, Public-Private Partnerships (PPP) has grown from early experiments in Australia towards various schemes in Continental Europe as well as the Private Finance Initiative (PFI) projects in the UK. Throughout these projects, whether they are manifested as Build Operate Transfer (BOT), Build-Own-Operate (BOO), etc., it is the operation phase that forms a key part of the process.

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PPP projects - such as PFI - can be described as those where a supplier is contracted not only to construct a facility such as a road or prison, but also to deliver the services, which the facility is intended to provide[2].

However, 'Project financing' is a term that has currency on a global scale. It covers a wide variety of projects but, as Merna and Dubey (1998) point out, they have one common theme; namely, that financing primarily comes not from the physical asset value, but from the asset's performance over the whole life of the project.

A driver for PPP was the wish to spread the cost of major projects and transfer payment from Capital to Revenue account. The emphasis of payment has changed; from the delivery of the asset, to the delivery of the services that the asset is intended to deliver. In theory this gives extra force to the customer, as payment is more closely linked to the quality of service delivery. Hence, in this paper, the term 'Service Delivery Focus' project is used rather than 'project financing' to emphasize this point.

THE NEED FOR CUSTOMER-CENTRED CONSTRUCTION

The contention that the UK Construction industry needs to be more 'customer-centred' is hardly novel. A fundamental part of the Lean Production philosophy as applied to the Construction industry is built upon the elimination of non-value adding activities through systematically considering client requirements (See Koskela, 1992).

Much has been written of the adversarial nature of Construction contracting; portraying UK contracting as characterized by highly competitive and aggressive tendering (Bresnen, 1991; Bresnen and Marshall, 2000). The result is that participants try to extract the best deals for themselves. Clients try to get the lowest priced bids from contractors who, in turn, try to drive down costs by leaning upon sub-contractors (Miozzo and Ivory, 2000). This results in a cost obsessed mindset that results in a fragmented, adversarial culture militating against ensuring the best project performance for the customer. Consequently, the improvement gained by importing private sector management skills can be offset by an increase in transaction costs through litigation (Winch, 2000)

Lean thinking philosophy has triggered research combining ideas such as Concurrent Engineering (Anumba *et al.*, 1997; Kamara *et al.*, 2000) and methodologies such as the Process Protocol (Kagioglou *et al.*, 1998; Lee *et al.*, 2000). Common to this research is the appreciation of a Construction project whole life. However, seemingly the main emphasis hitherto has been on the production end of the spectrum. This is significant for SDF projects, for the overall success of the project relates to the operations phase (Owen and Merna, 1997; Merna and Owen, 1998); service delivery research suggests that not all contingencies can be built-in before this later phase (Zeithaml, 1981).

The existing literature shows that there are two main issues to be considered in relation to SDF projects specifically. Firstly, the impact of PPP type projects upon the relationship between the "end-user" customer and the management of the project. Secondly, there needs to be a rethink of the idea of "customer". This draws partly from lean-informed philosophy, which assumes that everyone is a customer.

[2] The benefits of these projects, as defined by the NAO Report "Modernising Construction", are i) The use of private sector management and business skills incentivised by having private finance at risk ii) The transfer of risks to those best able to manage them. iii) New and innovative approaches including solutions that do not necessarily include a Construction project, and iv) A focus on customer requirements (NAO 2000).

Essentially, this paper suggests that further investigation of the impact of a project's whole life cycle is still required.

End user orientation

Criticisms have been made of existing PFI schemes suggesting that bidders are more concerned with maximizing revenue for their own gains, often at the customer's expense[3]. Indeed, Winch (2000) suggests that the client has become ever more separated from the design activity, passing on design leadership and specification to private sector architects and becoming a recipient, not a participant. This is pertinent for PPP/PFI, as (apparently) the public sector client is reintroduced into the processes of brief preparation, because user departments know what services they require.

However, a significant problem is how to translate a customer's knowledge of their service needs into a brief for a building designed to deliver those outputs. This is often because users have deficient understandings of building design or Construction management. Looking at service delivery in general, Zeithaml (1981) notes that the customer is not always able to define the quality of services prior to purchase. She identifies three levels of quality that the customer has to appraise goods and services: -

- Search Qualities that a consumer can determine prior to purchasing a product.
- Experience Qualities, which can only be discerned after purchase or consumption.
- Credence Qualities, which the customer may find impossible to evaluate, even after purchase and consumption.

Here Zeithaml is looking specifically at service levels in product purchase, which is relatively straightforward. On SDF projects, however, there can be significant changes in customer requirements in the design stage. Hence, it is espoused that closer client integration in the procurement process is indispensable in order to incorporate changing client needs in design[4]. But the fragmentation of the design and Construction team can militate against this information exchange. Indeed, the evaluation of service levels is further complicated, because customer requirements can change significantly over the whole life of an SDF project[5], which impacts upon Zeithaml's levels 2 and 3.

Consequently, extant theory suggests that if client needs are assimilated in the design stage, then performance levels can be measured and improved, because whole life project costs are lowered by designing-in operability (Lee *et al.*, 2000). However, given Zeithaml's hypothesis that many qualities are realized post-purchase (or in SDF projects, in the operations phase), it could be queried as to whether this designing-in provides a complete answer to managing the whole life of a project.

Rethinking the notion of 'customer'

As recent Construction research recommends, "each firm in the Construction supply chain must realize that at some point they are both a customer and a supplier, and that

[3] For example, there have been accusations that PFI schools projects are being configured to benefit the contractor rather than the long-term viability of education provision in the locality (Shaoul and Edwards, 1999). Also, allegations have been made that the designs of PFI hospitals have not met the requirements of NHS staff (Clark, 2001). Contractors have been criticised for refinancing PFI projects at more advantageous terms and not sharing the benefits with the client (Miozzo and Ivory, 2000).

[4] Which is stated aim of the UK Government *vide* the work of the Confederation of Construction Clients.

[5] For example, Government policies can change significantly in the medium term.

their value creation is a fundamental factor that can contribute to business success" (Love *et al.*, 2000: 194). This is reflected in calls for an appreciation of projects in a whole-life sense that embraces all participants (see Lee *et al.*, 2000). But, there are differing implications in delivering new products and new services; and both of these have to be incorporated in SDF projects.

There has been a substantial stream of New Product Development research, extolling the benefits of fast and regular product introductions (Datar *et al.*, 1997; Goffin, 1998). Similarly, there have been many investigations of New Service Development in the service sector (e.g. Johne and Storey, 1997). But, further consideration of service development is needed of PFI/PPP contracts in the Construction industry, echoing Wind and Mahajan (1988) who state that "successful New Product Development should focus on not only product features but on the entire product/service/financial offering...". Furthermore, there is less understanding of the simultaneous development of new products and services in research generally (Levene and Goffin, 1998), which is significant for SDF projects which combine elements of both.

DEVELOPING A SERVICE APPROACH

SDF type projects highlight the need to focus as much upon the requirements of service delivery as on delivering the asset (Owen and Merna, 1997). Numerous writers have sought to define what characterizes the delivery of services and distinguish them from the delivery of goods[6]. However, much research to date has focused upon perfecting the asset production process. Various initiatives have examined approaches such as construction as a manufacturing process[7]. These initiatives have reflected the industry's view of making itself more responsive to customer needs as a process of building *production* rather than as a process of building *use*. Mathe and Shapiro (1993) identified three aspects of product planning:

- The "physical" (and technological) dimension, including the product and process design for the physical product;
- The "service mix" dimension, which involves establishing the range and performance of the different services to be offered in conjunction with the physical product and the methods by which these services are to be produced and delivered;
- The "time" dimension which necessitates constructing a "product" management system for the length of the product's active life – a management system for the lifetime of the physical product and its accompanying services.

In SDF projects, dimensions 2 and 3 are particularly crucial; given that they are (by Construction industry standards) long-term projects, whose success (failure) is largely determined (for the client) by the performance of the services offered by the product.

Measuring and implementing a service approach

Because of the increase in SDF projects, such as Government PPP initiatives, there is even greater need to evaluate service provision effectively. One of the difficulties with service provision is the problem of measuring its outputs. The diverse nature of

[6] Dumoulin and Flipo (1991) mention factors such as the intangibility of services, the simultaneous production/consumption of services, the diversity of the nature of services and the extent of personal contact with the customer; often higher than traditional manufacturing, because of the bespoke nature of services.
[7] For example, Lean and Agile Construction, Concurrent Design and Engineering and Process Protocols

services means that it is not easy to devise measures appropriate for a range of clients with differing interests. Referring to measurement, the Confederation of Construction Clients (CCC) highlights important changes for facilitating project performance. These changes involve "collecting and interpreting data on the performance in use of Construction solutions"; in turn, these solutions should yield "maximum functionality for optimum whole life cost", through improvements that "minimize defects over the whole life of the Construction solution" (all CCC, 2000)[8]. However, there is scope with these early stage metrics to engage further with the potentially changing needs of over the whole life of the project.

This whole-life focus is vital for SDF Construction projects and is borne out elsewhere. Recent empirical research highlights how traditional project performance objectives (cost, time to market and quality) are insufficient for the whole life management of long-term projects. Instead, functions such as the level of life-cycle integration and facility operability are more apposite (Manivong, 2000). Equally, the aim of the Office of Government Commerce is " to provide high quality service, responsive to wide ranging customer needs and offering value for money. This means looking beyond price and considering the whole project life cycle" (OGC, 2001). Yet, it has been acknowledged that the Construction industry has yet to adopt a broad enough set of metrics by which to evaluate whole life performance (Lee *et al.*, 2000).

TEAMWORKING

Consideration needs to be given to the practical implementation of a customer-centred approach. Teamworking can provide a vital dynamic for SDF projects because the Construction management process is founded around project teams. Ensuring synergistic teamworking is a key factor in the success of Construction projects (Miozzo *et al.*, 1997). But further research is required in order to grasp how effective teamworking can be facilitated in practice. SDF projects place particular strains upon teamworking because delivering a service requires a closer relationship with end customers (Dumoulin and Flipo, 1991), who are often not aware of all their requirements in the early stages of a project (Zeithaml, 1981). What is also clear from the proliferation of SDF projects is the need to understand longitudinal and inter-organizational perspectives both of which have been highlighted as under-researched in extant general team literature[9]

It is apposite to detail at this point the practical characteristics of teamworking on SDF projects (e.g. PPP/PFI), which can be described in the following way:

- Because the projects are service delivery focused, they run for longer periods of time, with a core team over viewing the whole life of the project.
- The core team will have to work effectively together for a considerable period of time, with problems of changing membership, for example.
- Apart from the core team, there will be other teams involved with particular aspects of the whole life.
- Therefore, appropriate alignment is crucial for the successful flow of income from a project over time. This necessitates integration both within and beyond

[8] The CCC identifies four areas for cultural change, 17 sub-areas for improvement and 7 Key Performance Indicators for measuring these 17 sub-areas.
[9] See commentaries by (see Kanter, 1989; Levine and Moreland, 1990).

the team, difficult when teams are composed of members from contrasting organizations and occupational backgrounds (See Bresnen, 1991).

Lessons can be drawn outside the Construction industry. Teamworking in manufacturing has been described as "an organizational form that encourages mutual adjustment, facilitates multi-skilling and helps maintain a shared ideology" (Tranfield and Smith, 2001: 6). This is particularly vital for multifaceted projects, involving many diverse groups. There are correspondences here for Construction project teams involved with long-term projects where there is a particularly high level of uncertainty in terms of operation and maintenance (Akintoye *et al.*, 1998).

Existing research into the benefits of teams generally is largely based upon assumptions of sequential progression of team development[10]. The problem is that they assume a sense of linear progression that is not necessarily applicable for teams in long-term complex projects. Critics also suggest that teamworking research tends to overlook a team's context. For example, organizational hierarchies have been ignored as important determinants of team performance (Kanter, 1989). If this is a critical factor within an organization, it is even more so with project teams involving personnel drawn from different organizations.

Research into partnering and supply-chain management demonstrates the importance of Teamworking[11]. But, this research does not fully reflect the implications of SDF projects. It has been noted, that partnering and alliancing are usually described as dyadic relationships e.g. Client-Contractor, Manufacturer-Supplier and not in the creation and management of the kaleidoscope of shifting and ephemeral alliances which is the Construction industry (Bresnen and Marshall, 2000). Recently, there have been attempts made to address these lacunae. For instance, Anglo-Italian research Construction has suggested a more subtle understanding of teamworking over time, and beyond the confines of individual teams (Gherardi *et al.*, 2000).

Effective teamworking is clearly vital for Construction projects. But it is also becoming clear that there is scope for further research that directly addresses how to orchestrate teamworking, both within and between teams[12]. Outside the Construction industry, recent research reveals how effective teamworking can be facilitated throughout the life cycle of complex aerospace projects (Payne *et al.*, 1999). This empirical research shows that it is more appropriate to envision project-orientated processes in terms of core teams (responsible for the management of the life cycle of the project) interacting with extended 'macro' teams (responsible for delivering specific aspects of the project).

What has emerged from teamworking research in other industries is the need for an informed strategic level understanding of the *cultural implications* of teamworking approaches. In particular, Tranfield *et al.* (1998) note that implementing 'lean' teamworking (characterized as a tightly-coupled, heavily hierarchical, structure) can be detrimental for it does not mesh with the complex demands of project teamworking that requires more flexible working for multi-disciplinary tasks. Therefore, the

[10] For instance, the Tuckmann/Helreigel model is a commonly cited example, which has been criticised for giving a rather simplistic representation of team development (Hackman *et al.*, 1990).
[11] For example, BAA's high profile partnering system uses integrated teams, with members drawn from different organizations in order to work upon specific projects (See Miozzo and Ivory, 2000).
[12] For example, the ongoing project 'Building Down Barriers' investigates the importance of teams in the integration of supply chain (Holti, *et al.*, 1999).

implementation of effective teamworking depends upon the cultural conditions as well as the specific practical demands of any project.

CULTURAL CHANGE

Consequently, it seems that further critical appreciation of cultural change is required in order to ensure the success of SDF projects. The adversarial nature traditionally associated with the Construction industry has begun to be addressed through arrangements such as partnering, which encourages participants to "resolve problems jointly and informally through more effective forms of inter-firm collaboration" (Bresnen and Marshall, 2000a: 230). But what emerges from the literature is that cultural change is not easy to engender. As has been pointed out, "organizational culture is by no means a unitary and consensual phenomenon whose management involves a simple, 'top-down' process of senior figures manipulating key variables" (Bresnen and Marshall, 2000a: 234).

It has been said that Construction management research has begun to appreciate the heterogeneity of cultural phenomena[13] addressed elsewhere in general management (Payne *et al.*, 1999). Cultural differences can occur at many levels; individuals, groups, departments, etc. these differences can inhibit the emergence of a coherent working culture meaning that organizations are unable to "respond to the needs of those outside the boundary, and in particular to the changing needs of the customer" (Payne *et al.*, 1999: 5). This idea of customer-centredness is seen as important by Total Quality Management-inspired Construction research (Love *et al.*, 2000). But, more importantly, this paper notes how in practice, "the customer" is more than just the end-user. Because Construction clients are being asked to play a leading role in changing the industry (CCC, 2000) they (like commercial organizations) need to be weaned from self-seeking policies so that the customer sees the supplier as a colleague and not a combatant. In SDF projects, problems of *co-existent multiculturalism* are pertinent, given the complex relationships that emerge from teams with members from different organizational or occupational cultures (Ezukile *et al.*, 1997). Therefore, there is vital learning to be gained by researching further these cultural implications.

Learning implications of cultural change

Cultural change requires higher-level learning because organizations have to change existing working practices, necessitating a mindset shift (Argyris and Schön, 1996). The service delivery aspect of the Construction process is critical in such projects as PPP/PFI because they unfold a procurement process that is claimed to benefit from the superior abilities of the private sector to design and manage projects[14]. Cross functional, or organizational, teamworking must be a benefit of considering building projects in the light of *service delivery*, because responsibility for provision is integrated through a core team[15]. Owen and Merna (1997: 169) support this view, noting that many organizations "are for the first time tendering PFI projects which often involve not only the design and Construction but also the operating phases, with each phase requiring a high level of familiarity". Since operating phases extend over decades, it is evident that a strategic alliance effectively exists between the

[13] See criticisms of Seymour and Rorke (1995).

[14] It is asserted that the public sector "is characterised by substantial cost overruns and poor management skills" often because they "have been unsuccessful in the integration of design, build and operation of assets which are used to deliver public services" (Owen and Merna, 1997: 164).

[15] Indeed, here there is some evidence that there will be an emergence of specialist owner-operators responsible for integrating all stages of the PFI process (Ezukile *et al.*, 1997).

participating players. But, many commentators argue that the culture embedded in the UK Construction industry is ill at ease with the demands of SDF projects (Miozzo and Ivory, 2000). This paper suggests that there are lessons to be drawn from outside the Construction sector (Payne *et al.*, 1999). But, they are unlikely to yield many benefits without appreciating the cultural impact of teamworking on SDF projects; highlighting the need for frameworks that inform strategic level management thinking (Tranfield, *et al.*, 1998).

Construction research has benefited by developing certain philosophies adapted from other industrial sectors (Anumba *et al.*, 1997). But, as Tranfield *et al.* (2000) note, Teamworking can be implemented through a diversity of perspectives. For example, one potential avenue of research could builds upon high reliability thinking (Stringfield *et al.*, 2001). Here, research has emphasized how by promoting a 'failure-free' culture, it is possible to develop a coherent organizational form which can address how to produce sustained performance in complex environments.

CONCLUSIONS: LOOKING FORWARD

What emerges from our analysis is the benefit of having an integrated understanding of the whole life cycle of a Construction project. This is critical to aligning the interests of all parties involved in the Construction process. Four main themes emerge from the analysis above. Firstly, the Government supported rise of PPP/PFI is encouraging the development of service delivery focused projects. Second, apparently current Construction management is not able to cope with the implications of managing projects effectively over the whole life cycle. Third, the concept of teamworking is noted in Construction but it has not been adapted to the particular complexities of managing SDF projects. Fourthly, these themes constitute a challenge to the existing cultural mindset that is characterized by adversarial working.

Given the complexity of the issues involved, it would be unwise to suggest that a single project could provide *the* ultimate answer as to how Construction projects can become more customer-centred. The *BriC* project will investigate further teamworking and cultural change in SDF projects. What the project is aiming to deliver is a field-tested prototype, developed in an inductive manner. This applied approach to research gives scope to grapple with complex, nascent issues (Gibbons *et al.*, 1994); incorporating existing theory with research conducted 'in the field' develops knowledge that can be of use to managers[16]. Consequently, the authors envisage that this inductive approach will be most appropriate to identify guidelines for the successful management of SDF projects.

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[16] Indeed, projects taking a similarly applied approach have proved fruitful already (Fleming *et al.*, 2000).

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