

THE DEVELOPMENT OF A CONTINUOUS IMPROVEMENT FRAMEWORK FOR LONG-TERM PARTNERING RELATIONSHIPS

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ABSTRACT: The sub-optimal performance of the global construction sector in the last two decades has led to its scrutiny. Accordingly, improvements in the efficiency and competitiveness of the industry through reforms in contracting, tendering, design process, and other areas had been advocated. This consequently led to steady flow of research, reports and analyses on the nature of the industry, its various components, systems and structures. One of the key findings is the effective use and management of inter-organisational project teams in enhancing project success, thereby resulting in enormous interest in collaborative approaches such as partnering. However, when new initiatives and techniques are introduced, the challenges of quantifying their impact on performance improvement arise. The difficulty of the evaluation increases with complexity, duration and multitude of parties involved in the procurement process. This paper aims at describing the methodology proposed for a PhD research underway to develop a continuous improvement framework for long-term partnering relationships. The methodology adopted for the research is a hypothetico-deductive approach that comprises of two main stages. First, the framework is conceptualised from the synthesis of literature and preliminary interviews while the second stage involves the empirical testing of the framework using triangulated methods for collecting and analysing data. The framework will consider the complete whole life cycle of a construction project; planning and design, construction and operational stages.

Keywords - continuous improvement, hypothetico-deductive, long-term partnering, NHS LIFT, research methodology.

1. INTRODUCTION

The global construction industry has been under intense scrutiny in the last 20 years, and this is set to continue as owners and users demand better value for money from a more sustainable built environment. ECI (2003) reported that the traditional arrangements for delivering long-term contracts in the UK seldom achieve best value and repeatedly fail to facilitate continuous improvement in both client and contractor performance. This is because cost and performance are driven by market forces rather than a sharing of risks, opportunities and objectives between the parties. As a result, improvements in the efficiency and competitiveness of the industry through reforms in contracting, tendering, design process, quality management, productivity, training, education and other areas have been advocated.

One of the key findings in the many research efforts is the effective use and management of inter-organisational project teams in enhancing project success (Abudayyeh, 1994; Albanese, 1994). Propagated by this enormous interest is the emergence of 'partnering', which is purported to be the major agent of change within the construction industry, focussed on eschewing traditional adversarial relationships between project parties to encourage relationships based on the principles of trust, mutual respect and cooperation towards the achievement of a common goal (Warne, 1994; CIRIA, 1999). Although it seems that the very essence of partnering is to provide platform for the contracting parties to continuously improve their performance for mutual satisfaction and benefits (Bennett and Jayes, 1995),

practitioners face the challenge of how to embed and sustain its principles and practices into organisations (Thomas and Thomas, 2005). For the purpose of this research, continuous improvement is defined as “a purposeful and explicit set of principles, mechanisms and activities within an organisation adopted to generate continuous and systematic improvement in deliverables, operating procedures and systems by the people who actually perform these procedures and operate the systems”.

However, when organisations adopt new philosophies, such as partnering or other collaborative approaches, they are usually faced with difficulties in measuring or quantifying the contribution that the new approach has made to the overall performance of the organisation (Giunipero and Brewer, 1993). Ibrahim and Price (2005) noted that the difficulty increases with the complexity, duration and multitude of parties involved in the procurement process and conceptualised a continuous improvement framework for long-term relationships, such as long-term partnering (LTP) arrangements. LTP has been defined by ECI (2003) as “the development of sustainable relationships between two or more organisations, to work in cooperation for their mutual benefit in the requisition and delivery of works, goods and/or services over a specified period to achieve continuous performance improvement”. The LTP model that will be the focus of this research is the NHS LIFT (National Health Service Local Improvement Finance Trust) scheme, which involves participants from the public, private and voluntary sectors.

The overall aim of the PhD research is to develop a continuous improvement framework (including “what” and “how” to measure construction processes, products and services) in long-term partnering relationships. However, this paper aims at describing the methodology proposed for the development of the framework. The following sections describe the structure of the NHS LIFT scheme, the approach adopted for the research, the research process including the research methods used, the research scope; the use of the framework in measuring improvement; and finally a conclusion.

2 THE NHS LIFT

The NHS LIFT scheme is focussed at developing and encouraging a new market for investment in primary care and community-based facilities and services. It is expected to serve as the new engine both for improved quality of care provided and the environment in which it is delivered. To date, 51 projects have been approved under the scheme in four waves. As at December 2005, almost 50 facilities have become operational, and over 50 more are expected to open in 2006 (Department of Health (DoH), 2005). All the 42 LIFT projects under the first three waves have reached financial close, and several are proceeding towards second and subsequent financial closes, with a total capital value (for initial buildings) of over £700 million (DoH, 2005).

Under the LIFT scheme, the DoH has established a national joint venture (NJV), *Partnerships for Health* (PfH), with Partnerships UK plc (PUK) which is itself a public-private partnership (PPP). Subsequently a *private sector partner* (PSP), a consortium of diverse specialties, is identified through a competitive procurement and then a local joint venture (LJV) established between the local stakeholders, PfH and the PSP. The LJV (the *LIFT Company*) enjoys the benefits of a long-term partnering agreement to deliver investment and services in local care facilities over contractual period of between 15 to 20 years. Figure 1 shows the structure of a typical LIFT and the recommended shareholding limits.

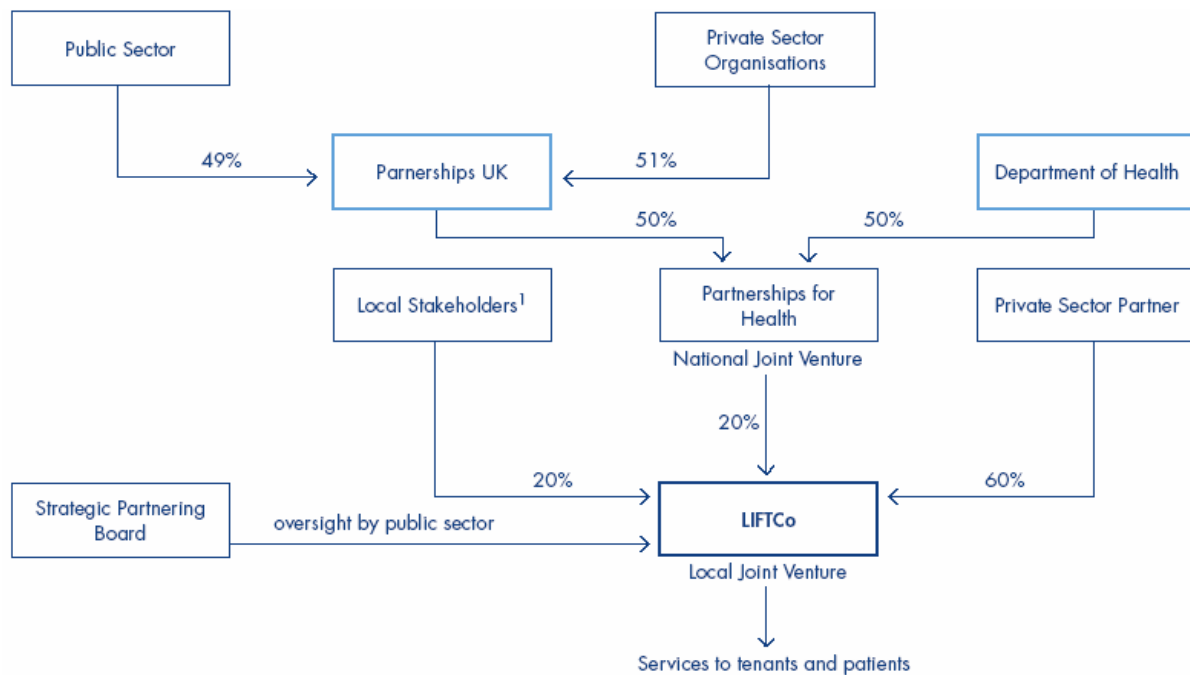


Figure 1: Structure of LIFT (Source: National Audit Office (NAO), 2005)

The local LIFT companies are set-up as public-private partnerships in the form of limited liability companies, and each is run by a management board comprising of directors nominated by the shareholders; the PSP, local NHS and PfH. They are structured to enable GPs or groups of GPs to be shareholders also. A public sector *Strategic Partnering Board* (SPB), formed between the core statutory bodies in the local health and social care community (i.e. Primary Care Trusts, Local Authorities, voluntary sector, etc.), through a *Strategic Partnering Agreement* (SPA) to develop *Strategic Service Development Plans* (SSDP), incorporating local primary care service needs and relationships with, for example, intermediate cares and local authority services. The SPBs are also responsible for monitoring the performance of the local LIFT companies and for identifying their future workloads. The local LIFT Companies are responsible not only for managing and implementing agreed investments and services, but also for planning future estate and services requirements to meet the local health economy's needs and developing opportunities identified by the private sector partners.

Like the Private Finance Initiative (PFI), LIFT is a way of accessing private money for public projects but unlike PFI deals, LIFT deals are based on the local LIFT Company owning the premises which it builds and refurbishes. Income comes from leasing space to Primary Care Trusts, healthcare professionals (including General Practitioners (GPs), pharmacists and dentists) and other interested social care or voluntary sector tenants (NAO, 2005). However, although the LIFT scheme has a contractual requirement for continuous improvement from the demand and supply sides, the attainment still remains elusive (NAO, 2005). Specifically, the NAO report was critical about the inconsistencies in the evaluation and performance measurement arrangements, and emphasized the need for strengthening of the accountability framework.

3. HYPOTHETICO-DEDUCTIVE APPROACH

Royer and Zarlowski (2001) advocated the use of a hypothetico-deductive approach in developing conceptual frameworks in doctoral dissertations. Under this approach hypotheses are formulated from existing principles and theories in literature and, subsequently, verified through experiencing and testing (Vittikh 1996). In engineering and management research, the hypothesis can be in the form of a conceptual framework that is verified through empirical testing (Royer and Zarlowski 2001).

In the light of this approach, this research has been divided into two stages. The first stage is the formulation of the framework based on the synthesis of a rigorous literature review and preliminary interviews. The second stage will be the empirical testing of the framework through triangulated data collection and analysis methods, where both quantitative and qualitative techniques are used to modify, confirm and validate the framework (Fellows and Liu 2003).

4. THE RESEARCH PROCESS

Based on the discussion in the previous section and in the light of the adopted hypothetico-deductive approach, a full research process was developed. This is illustrated in Figure 2 and subsequently explained below.

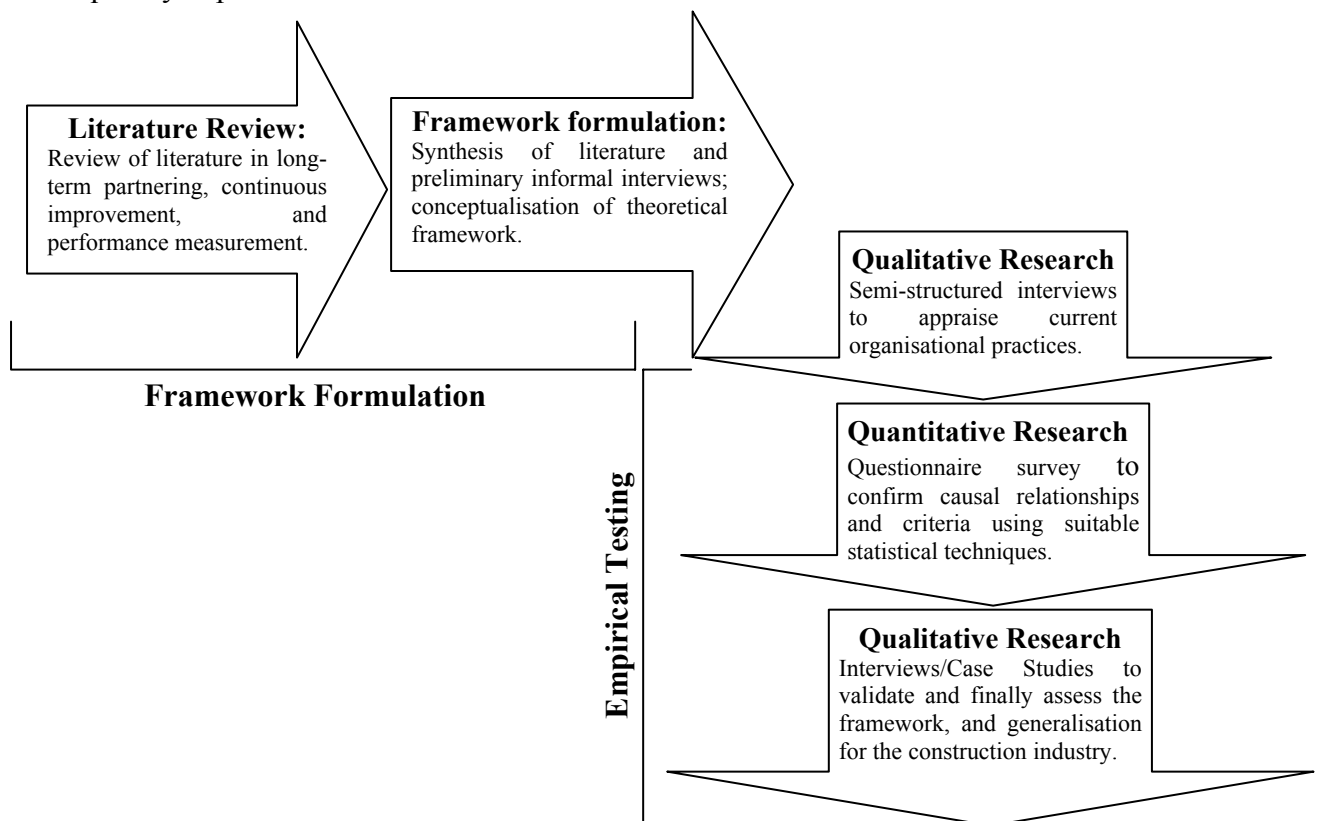


Figure 2: The Research process

4.1 Literature Review

Literature review is concerned with reviewing established theories, findings from other research and particular applications of theory (Fellows and Liu, 2003). Databases of journals, texts and conference papers were used, in addition to Internet searches. The search resulted in a bibliography of over 250 citations. For this research, the topics reviewed include: long-term partnering relationships; continuous improvement concept, principles and application; building performance measures/indicators/criteria and measurement systems, with a view to identifying gaps in knowledge and practice. These topics were reviewed in general and particular applications in construction.

This review served three main roles: first it provided a good foundation for the future of this research by throwing light on all relevant issues; secondly, it has made the contemporary issues more clearly while highlighting the gaps in knowledge and practice; and thirdly it acted as a basis for the formulation of the proposed framework that is discussed in the following sub-section.

4.2 Conceptual Framework Formulation Process

In formulating the conceptual continuous improvement framework, this research used Atkin *et al.* (2003)'s view on the definition of construction process improvement to conceive the theoretical framework. The aim of this objective is to facilitate a clearer understanding and diagnosis of the construction process towards ensuring proper measurement of any improvement initiatives. By synthesis of the reviewed literature and through three preliminary informal interviews with persons with hands-on experience on NHS LIFT procurement strategy, a theoretical framework was developed. The resulting framework for long-term contracts was reported by Ibrahim and Price (2005) and uses a three-phase process in a sequential process flow (see Figure 3). The continuum represented by the loops distinguishes long-term relationships from the traditional one-off contracts. These provide opportunity for performance improvement through feedback from lessons learned throughout the lifecycle of the relationships.

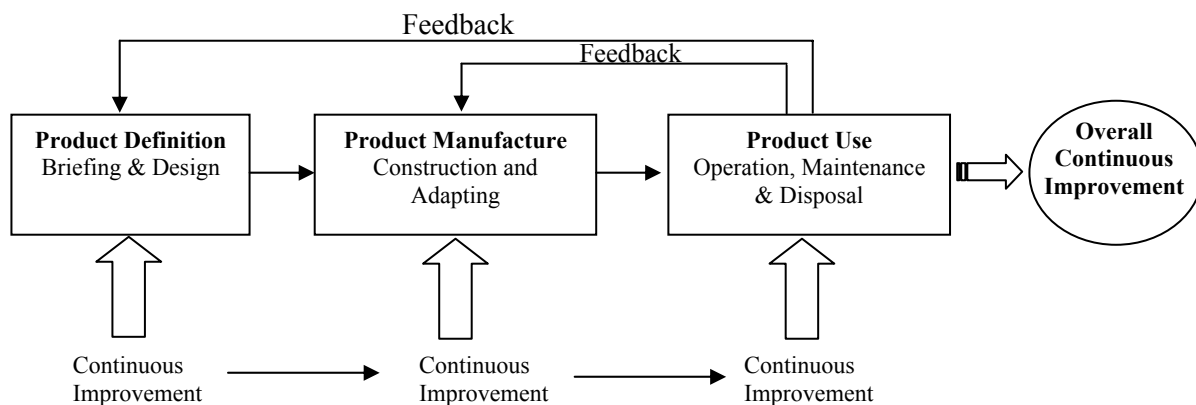


Figure 3: A conceptual model of continuous improvement (Ibrahim and Price, 2005)

The basic philosophy of the proposed framework is to assist organisations involved in long-term construction contracts in identifying performance gaps by analysing current operations, and through that, identifying the causes of gaps, and to generate and manage improvement activities targeted at closing the performance gaps. In so doing, a full-blown model will

include both vertical and horizontal communication processes. The vertical communication includes both the top-down strategy-driven process of goal-setting and deployment of improvement initiatives and the bottom-up process of reporting the results to sustain the improvement initiatives through effective feedback mechanism. The horizontal communication process involves dissemination and exchange of results and experience obtained from performing improvement activities.

4.3 Interviews

Interviews are methods of collecting data through face-to-face or voice-to-voice interactive dialogue in order to discover the opinions or feelings of people on a certain subject (Hussey and Hussey, 1997). In general, there are three forms of interviews commonly used in business research: structured; semi-structured; and unstructured (Fellow and Liu, 2003; Hussey and Hussey, 1997).

Structured interviews are by definition very specific and include defined questions and limited probing. They are similar to a questionnaire conducted in person. In unstructured interviews, questions can differ among the interviews, the interviewer might not have questions prepared and can probe freely. In the middle of the above two extremes are the semi-structured interviews in which the interviewer has prepared some questions or a frame for the dialogue and is also free to probe when necessary. Because of the objectives of this study, the semi-structured type of interview has been selected in preference to structured or unstructured interviews.

Issues that will be investigated at this stage relate to improvement measurement practices. This will include determining whether:

1. Stakeholder (client, employees, investors, suppliers, alliance partners and community) satisfactions are measured.
2. The Measures used help in establishing whether the organisations have the right targets, right strategies for achieving the targets, the strategies are understood throughout the organisations, and whether the strategies are being implemented or need changing.
3. The measures used enable the establishment of whether the processes for developing the construction products are efficient and effective, service planning and delivery are efficient and effective, planning and management of the organisations are efficient and effective.
4. The measures used allow the establishment of whether the technologies, people skills, infrastructure and the best practices the organisations require are in place.
5. The organisations have formal quality improvement system in place. Here, formal quality certifications and specific quality initiatives implemented will be investigated together with how long they have been implemented in the organisation.
6. The organisations use any improvement tools/techniques. A list from literature will be provided but respondents will be given the opportunity to include any additional tools used. Here, the current level of use and the perceived level of importance will be investigated.

The sample of the interviews is initially planned to cover respondents at different management levels in 5-8 key stakeholder organisations amongst the functional NHS LIFT schemes. Following the interviews, an improvement measurement framework that will

address the issues raised above and identified during the interviews will be developed, and this will be the subject of the questionnaire survey that will follow.

4.4 Questionnaire Survey

A questionnaire is a prepared set of questions in which respondents record their answers in an administered survey (Sekaran, 2003). The aim of the questionnaire survey in this research will be to confirm, reject or modify the causal relationships between the various components of the framework. Different aspects of conducting the questionnaire survey will be considered to obtain the best results in terms of statistical significance, validity and reliability. The design of the questionnaire will follow the widely accepted principles of formatting questionnaire layout described in Easterby-Smith *et al.*, (2002) that include: starting with factual questions, then asking more opinionative questions; including instruction on how to answer questions; and varying the types of questions, while keeping similar types grouped together. The questionnaire will be used to assess the detailed theoretical framework and to obtain preliminary feedback on its usefulness, practicality, applicability and comprehensiveness.

A pilot survey instrument will be reviewed for content and facial validity by practitioners and academics. Feedback from the pilot study will be used to modify and clarify the wording and format of the survey instrument. One of the key issues that will be considered at this stage is the validity of making meaningful comparisons and generalisations if the respondents' experiences are not under similar circumstances or not linked to a specific project environment. Therefore, in order to obtain homogenous data set, the NHS LIFT scheme will be used as the typical model of long-term partnering relationship.

The basic framework and criteria of the *Achieving Excellence Design Evaluation Toolkit* (AEDET Evolution) already in use for evaluating NHS LIFT proposals (shown in Figure 4) offers a viable platform for the proposed continuous improvement framework, but with some expansion and restructuring.

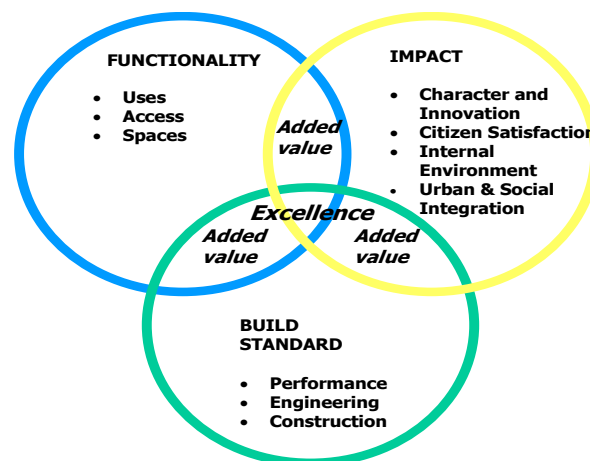


Figure 4: Basic framework and criteria for AEDET Toolkit (NHS Estates, 2005)

The expansion will recognise the intricacies and dynamisms of long-term partnering relationships amongst the stakeholders through the lifecycle of the relationships. This will require reactive as well as proactive measures (Shiba *et al.*, 1993) involving the use of both lagging and leading performance indicators. Whilst the lagging indicators shows the final outcome of an action usually after it has been completed such as time/cost growth, the leading indicators predicts, with certain degree of confidence, a future outcome such as

process cycle times. Although most of the information provided by lagging indicators may have come far too late to allow any immediate changes to be made, they may still be useful under long-term relationships. Leading indicators have been argued to be far more effective in driving forward continuous performance improvement (Atkin *et al.*, 2003). On the other hand, the restructuring will take cognisance of the purpose of the framework, which is for the evaluation of the continuous improvement of the processes, products and services in long-term partnering relationships.

Also, because it is often not possible to survey an entire population for practical and cost reasons, a sub-set or sample of the population will therefore be suitable for study (Brewerton and Millward, 2001). However, the appropriateness of sample size is generally not a straightforward decision and can sometimes be very complex. Nonetheless, different methods can be used to estimate the sample size, based on the statistical power required to report significance or non-significance accurately. For research based in the construction industry, Mbugua (2000) had outlined a rule-of-thumb dictating a minimum of 30 responses being adequate. The above considerations are relevant where the study population is infinitely large. However, where the study population is known, the rough formula provided by Easterby-Smith *et al.* (2002) for calculating sample size (n) in terms of the maximum error (E) required, as shown in equation (1) will be used:

$$n = \frac{2500}{E^2} \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

Thus, responses for this research will be restricted to the stakeholders in the fifty-one (51) NHS LIFT projects approved in the first four waves.

4.5 Validation and Generalisation

Before the survey results are discussed, reliability and construct validity tests will be conducted to determine the appropriateness of the proposed classification. Cronbach's alpha (α) model, which measures the internal consistency, will be utilised for the reliability analysis. The values of alpha reflect the degree to which elements in a group are homogenous and the extent to which these elements are related to each other (Sekaran, 2003). The construct validity testing, which encompasses content, face, convergent and divergent validity, will be undertaken using qualitative and quantitative means. While content and face validities will be conducted through pilot survey, the convergent and divergent validities will be conducted using factor analysis.

Although the use of the above statistical methods for data analysis provides quantitative validation for the causal links of the framework, further validation is required. Pidd (2003) stressed the need for the scientific and professional community to show acceptability for any proposed framework. This research will therefore utilise expert interviews in selected case study projects to achieve the validation objectives.

Case studies are another qualitative evaluation method involving in-depth contextual analysis of similar situations in other organisations, where the nature and definition of the problem happen to be the same (Sekaran, 2003). Case study research can follow pure inductive or a mixture of inductive and deductive methods. The purely inductive method is used for building theory from scratch as in the case of exploratory research. However, the mixture of inductive and deductive methods is recommended if a prior theory exists and is more confirmatory in nature (Sekaran, 2003). The latter has been preferred by many authors even those who are proponents of the first method (Perry, 1994), and is therefore, used in this

research. Within this method, a prior proposition is charted from literature, and evidence is sought to critically evaluate the proposition, either by substantiating or negating and thus, modifying it (Rowley, 2003; Sekaran, 2003). The theoretically formulated framework acts as the prior proposition and evidence is sought to either confirm or revise the framework.

The essence of this stage is to further identify the implementation bottlenecks that will facilitate the development of a practicable framework. The usefulness, practicality, applicability and acceptance of the final framework will be assessed within this step of validation through 5-6 semi-structured expert interviews each in three case study NHS LIFT projects.

5. USING THE FRAMEWORK FOR MEASURING IMPROVEMENT IN LONG-TERM PARTNERING CONTRACTS

The major stakeholders involved in a typical LIFT company include Partnership for Health the local health authorities/PCTs and various organisations that make up the private sector partners. The key driving objectives of these parties are quite diverse, could be conflicting and subject to change from project-to-project and at different times of the same project. This therefore necessitates the systematic development of the key value drivers of each project and during each improvement measurement exercise.

In implementing the framework, a procedure involving three converging levels is recommended. The first level identifies the evaluation phase within the whole life cycle of the project; the second level identifies the relevant performance categories; and the third level defines the elements of performance and equates them to the needs and goals as identified in the project key value drivers. The extent of attainment of the aligned project objectives can then be used as the criteria for determining areas that require improvement. The causes of performance of gaps will be identified and corrective strategies for closing the gaps generated and managed. This will rely on both vertical communication processes of goal setting, deployment and feedback and horizontal communication processes of exchanging results and experience obtained from improvement practices.

6. CONCLUSION

The need for a continuous improvement framework that comprehensively encapsulates the performance aspects of a construction facility has been advocated by many researchers and reviews. This is especially necessary for projects procured under long-term relationships. This doctoral research aims to develop such a framework for long-term partnering relationships and the paper in hand describes the research methodology followed. A hypothetico-deductive approach has been advocated and this divides the research into two stages: the framework formulation stage and the empirical testing stage. The first stage starts with a thorough literature review which formed the basis for the development of a conceptual framework. The second stage of the research process is concerned with the empirical testing of the framework and adopts a triangulated approach of research methods that includes interviews and questionnaire survey. Validation and assessment of the framework generalisation over various types of project organisations will be conducted via expert interviews/case studies.

The framework is expected to provide the construction industry with a tool that can be used to assess performance improvement in a more comprehensive way. It should assist

managers in identifying specific problem areas and their effects on performance and thereby taking better and more effective decisions.

Although the proposed framework will have fixed main criteria and causal relations, organisations would have flexibility in defining project-specific indicators for each criterion. This flexibility substantiates the idea that it is a framework rather than a strict model. Nonetheless, it is possible and recommended to develop standard indicators for each criterion and consequently use the framework for benchmarking purposes.

7. ACKNOWLEDGEMENT

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