THE PRACTICE OF DESIGN-BUILD PROCUREMENT METHOD IN SOUTH AFRICA

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Abstract
A well implemented good practice of Design-Build procurement method brings different disciplines and aspects of construction process together, which in turn minimises the incidents of constructors having to repeat work, and thus, result in cost and time savings. This type of procurement method increases the probability of a successful project that meets the expectations of all stakeholders. A bad practice of Design–Build procurement method increases the probability that the project's performance will be compromised and that some or all of the stakeholders disappointed. Data were collected from consultants and contractors using a structured questionnaire via personal contact and email. The collected data were subjected to descriptive statistical analyses. This paper argues that design-build procurement is not correctly practiced in South Africa. This may be due to the late introduction and the level of understanding of the procurement method.

Keywords: Construction procurement, Contracting for Design-Build services, Design-build practices, Executing Design-Build projects, Procuring Design-Build services

1 Introduction

The design-build system is probably the oldest in the world. Master builders were providing buildings to meet the client's individual needs long before architecture became divorced from the building process (traditional procurement method). Design-build is, therefore, a return to a former system which re-emerged in the post-war USA mainly for industrial and commercial projects, when architects tended to ignore their code of practice which precluded them from becoming contractors. By the 1970s many American architects were involved in design-build to the point where their institute was virtually forced to acknowledge the trend and approve it (Masterman, 1996).

Design-build started being used in America during the early 1900s (Greenfield, 1982). In the 1970s and 1980s, design-build was used extensively, especially in major power and industrial projects (Poirot et al, 1994). In 1991, about 5% of all construction in the USA was based on design-build (Setza, 1991). In the mid 1990s, more than one-third of construction projects were using the design-build approach and in response to the growing demand for it, the "Design-Build Institute of America" was set up.

The client's knowledge and understanding of the construction and project implementation has been regarded by many researchers like Morledge (1987) as critical characteristics in terms of client behaviour when dealing with the construction industry. Behavioural responses exert a

significant influence on the effectiveness of the project management process because of the views of the various professions and skills involved, many of which have strong allegiances and perceive projects from very different positions (Walker, 1996).

An empirical survey conducted by Mbanjwa and Basson (2003) indicates on a scale of 1 to 5, with 1 indicating no knowledge and 5 indicating excellent knowledge, that the traditional procurement system was rated the most favoured form of procurement systems, followed by construction management (ranked 2nd), management contracting ranked 3rd; design and build (turnkey) ranked 4th; and design and manage including (build, operate and transfer) ranked 5th. This shows that design-build is still not well understood in South Africa thereby affecting the way design - build is practised and implemented.

Problems stemming from design-build practice may be traced to the following two factors:

Firstly, the late introduction of this procurement system into the South African construction industry compared to other countries especially in Europe. Construction Industry Development Board (CIDB, 2008) stated that construction procurement emerged in South Africa in 1994; one should compare this to a country like the United Kingdom in which different procurement systems were very much in use as early as 1950 (Masterman, 1996). The second is that of perception; South Africa being a developing country where information about this new procurement method is still lacking, clients may view design-build projects in a certain way influenced by their level of understanding of the method. Galbraith (1995) suggested that all clients will be influenced more by experience when choosing their procurement strategy than by project-specific factors.

This paper argues from stakeholders' opinion that design – build is not well practised in South Africa and also lack of understanding of the design – build procurement method. A better understanding of the practices of design-build procurement method will allow more clients to use this procurement route which has been proven to demonstrate superior performance in some types of projects. Studies have shown that its use results in improved time performance (Ling, 2004).

2 Literature Review

2.1 Design – Build Defined

Richard (1975) referred to "design-and-build" (also known as design-build) as a situation when a client contracts with a single firm in both design and construction. For Harold (1976) it is present when a substantial amount of building is accomplished under a single contract, covering both the design and building of the project (construction). According to Balogun (1992), design-build is a contract in which a building contractor does some or all of the design work and produces the building very quickly, particularly if the contract is a negotiated one. Ellis (1990) pointed out that with design and construction work under one roof, the contractor's knowledge of the building process is incorporated in the design process.

Forms of suspicion are eliminated because those responsible for design-build are able to perceive themselves as members of the same team, unlike in the traditional method. In addition, the line of communication becomes short and relatively informal. Arguing the case for design-build, Titmus (1982) remarked that the traditional competitive tender process is increasingly losing favour, especially as competitors are often unequal in standing and ability, which causes the project to be eventually executed in an atmosphere of "them and us".

According to Finlay (1983), this form of project procurement may be on a fixed price or cost reimbursement basis. It may also be competitive or negotiated. Examples of such projects include factory buildings, medical clinics, and schools using a proprietary system, where benefits can be obtained. Also, where a contractor's proprietary system can be used without

detriment to the client's requirements, economic advantages stem from a modified form of design-build. Jones (1984) referred to this system as one where the designer is also the builder of a project. All these definitions can be summarized thus:

"Design-build system is when both design and construction are included in a single contract between the owner and the contractor either on a lump-sum or cost-plus basis e.g. housing and industrial constructions or an arrangement where one contracting organization takes sole responsibility, normally on a lump sum fixed price basis, for the bespoke design and construction of a client's project. The fundamentals of this procurement method are that the responsibility for design and construction lies with one organization and project carried out to meet the needs of the client".

Asides the introduction and reference sections, sub-sections are allowed as outlined here. Similarly, further sub-sections are allowed as seen below

2.2 Construction Procurement in South Africa

According to CIDB (2008), construction procurement in South Africa evolved in 1994 when the South African Ministry of Public Works identified an urgent need for public sector procurement reform as regards construction projects. After an initial review of the regulatory environment that impacted upon procurement, it was concluded that such reform could not be undertaken on a sector by sector basis since a fundamental review of the entire public sector procurement system was required.

As a result, a joint initiative was embarked upon by both the Ministries of Public Works and Finance, the outcome of which was the release of the Green Paper on Public Sector Reform in 1997. A Procurement Focus Group was established by the Inter-ministerial Task Team for Construction Industry Development in 1999, at the request of the construction industry stakeholders, in order to examine aspects of construction procurement and delivery management. In 2000, this Group recommended that a uniform and standardized procurement system be established for the construction industry. In the process of doing so, CIDB was faced with a major challenge to develop a procurement system that would:

- Be compatible with the supply chain management framework that was being established by the National Treasury in terms of the Public Finance Management Act, 1999 and the Municipal Finance Management Act, 2003;
- Serve the needs of a decentralized public procurement system in terms of which the accounting officers or accounting authorities in organs of state would be responsible for their own procurement processes, and
- Be attractive to and serve the needs of the private sector

2.3 Design-Build Practices

DBIA (2014) identified best practices of design – build that can be applied to any type of design-build project and can effect project performance as divided into three primary sections. These include the following:

A. Procuring Design-Build Services,
B. Contracting for Design-Build Services and
C. Executing the Delivery of Design-Build Projects.

A. PROCURING DESIGN-BUILD SERVICES

DBIA identified the following as three (3) best practices for owners:

(1) Conduct a proactive and objective assessment of the unique characteristics of its program/project and its organization before deciding to use design-build. (2) Implement a

procurement plan that enhances collaboration and other benefits of design-build and is in harmony with the reasons that the owner chose the design-build delivery system. (3) Use a competitive design-build procurement that seeks price and technical proposals should: (a) establish clear evaluation and selection processes; (b) ensure that the process is fair, open and transparent; and (c) value both technical concepts and price in the selection process.

B. CONTRACTING FOR DESIGN-BUILD SERVICES

DBIA identified the following as three (3) best practices:

(1) Contracts used on design-build projects should be fair, balanced and clear, and should promote the collaborative aspects inherent in the design-build process. (2) The contract between the owner and design-builder should address the unique aspects of the design-build process, including expected standards of care for design services. (3) The contracts between the design-builder and its team members should address the unique aspects of the design-build process.

C. EXECUTING THE DELIVERY OF DESIGN-BUILD PROJECTS

DBIA identified the following as four (4) best practices:

(1) All design-build team members should be educated and trained in the design-build process, and be knowledgeable of the differences between design-build and other delivery systems. (2) The project team should establish logistics and infrastructure to support integrated project delivery. (3) The project team, at the outset of the project, should establish processes to facilitate timely and effective communication, collaboration, and issue resolution. (4) The project team should focus on the design management and commissioning/turnover processes and ensure that there is alignment among the team as to how to execute these processes.

3 Research Methodology

65 questionnaires were distributed, 40 completed forms were received, representing a response rate of 62 percent. Fifteen (37.5%) were construction managers, seven (17.5%) were engineers, 13 (32.5%) were quantity surveyors, one (2.5%) civil technicians, one (2.5%) town planner, one (2.5%) building surveyor and two (2.5%) others. Unfortunately, there was no response from architects which causes the results not to reflect the latter's' opinions.

Research was carried out through the use of questionnaires in two ways:

1. Structured interviews with managers and directors of companies who are known to be stakeholders in the South African construction industry using questionnaires. These included the construction managers, quantity surveyors, project managers, engineers Interviews were conducted by running through the questionnaire and;
2. Emailing questionnaires to managers and directors of companies who were known to be stakeholders in the South African construction industry. The questionnaires were self-administered by the respondents and expected to be sent back via email.

The respondents were asked to rate the extent to which they agreed that design-build is not correctly practised in South Africa, where 1 = strongly agree/always/very good; 2 = agree/often/good; 3 = undecided/regularly/average; 4 = disagree/rarely/bad; 5 = strongly disagree/never/very bad depending on the type of question. Respondents were also invited to furnish their comments, state other design-build related problems and rate them.

This study adopted an opinion research approach to gather useful information on the design-build method. Data from the survey were first entered manually on a data sheet with coded variables. Data from the forty questionnaires were then analysed and evaluated using the Statistical Package for Social Sciences software (SPSS). A chi-square test of the mean and

Spearman's rank correlation were carried out with the help of SPSS to find out whether the stakeholders' opinions agree with the statements or not. In addition the frequency tables were computed using the SPSS and results presented using bar charts.

The major study was carried out in Gauteng Province which includes both Pretoria and Johannesburg while the remaining study took place in Kwazulu Natal and Mpumalanga Provinces. This is because the majority of construction activities are concentrated in Gauteng Province both in terms of size and complexity.

4 Findings and Discussion

The chi-square test results show that design-build contracting is not correctly practised in South Africa ($X2 = 11.4000$, $P \leq 0.05$). The results also show there is a significant level of agreement by the respondents that there is a problem in the way design-build contracting is practised in this country.

Table 1. Design-build contracting is not correctly practised in South Africa

Q2.3 (V8) Rating	Frequency	Percentage	Cumulative %	Cumulative Freq.
Strongly agree (1)	3	7.5	7.5	3
Agree (2)	10	25.0	32.5	13
Undecided (3)	18	45.0	77.5	31
Disagree (4)	9	22.5	100.0	40
Chi-square test (X^2) = 11.4000		P. value = 0.0097 ≤ 0.05		

Explaining the problem further as reflected in the frequency table (Table 1, column 2), most respondents are not sure whether design-build is correctly practised in South Africa. This can be attributed to the discussion above that the design-build method is not well understood due to late introduction of the method in South Africa and wrong perception about how its processes are carried out, see figure 1 below illustrating the frequency. A total of 18 (45%) were undecided, followed by ten (25%) in agreement, while only nine (22.5%) disagreed and the remaining three (7.5%) strongly agreed.

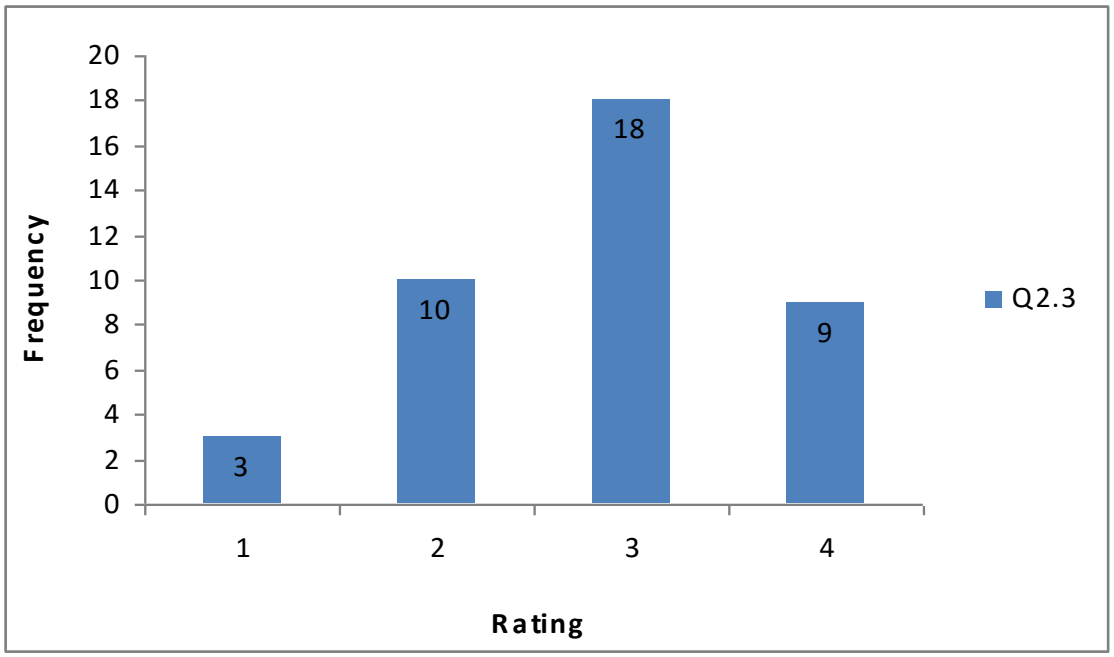

Figure 1. Frequency of responses regarding whether design-build is correctly practised in South Africa (Bar chart).

5 Conclusion and Further Research

From the findings design-build procurement method is not well practiced in South Africa. Also design-build is not well understood due to lack of experience and exposure. In order to effectively improve the practice of design-build projects in South Africa, it is recommended during implementation the clients should use a procurement process that: (a) focuses heavily on the qualifications of the design-builder and its key team members rather than price; and (b) rewards design-build teams that have a demonstrated history of successfully collaborating on design-build projects. Also the clients must identify and involve key project stakeholders at the early stages of project. All design-build team members should be educated and trained in the design-build process, and be knowledgeable of the differences between design-build and other delivery systems.

This study contains several limitations. Firstly, the responses gathered from stakeholders were based on their perceptions, which are subjective. Secondly, different respondents may hold different views on the points of the rating scale. While two respondents may have rated an answer as 3 (undecided), they may nevertheless not encounter the same level of difficulty as regards the issue identified. Lastly, the composition of the respondents did not include any architects because no responses from the questionnaire sent out stemmed from these professionals. Thus, there may be biases in the results against the architects' perception. In future, more data should be collected involving the architects and the public sector so that a more balanced comparison and conclusion can be made.

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