

# The design and build procurement route changes construction essay

[Business](#), [Industries](#)



## **Abstraction**

Design and construct procurement method is a bringing method in which the design and build contractor is contractually responsible for the design and building.

Harmonizing to Konchar and Sanvido ( 1998 ) , the design and construct procurement system has been shown as a method of efficient bringing and has gained its popularity abroad. However it does not have the same popularity in the Sri Lankan construction industry because the traditional procurement method has been widely adopted in the Sri Lankan building industry. This survey foremost conducts a literature reappraisal to place the factor that affects the choice of the design and construct procurement method in general and so it gives an overview of the Sri Lankan Construction industry. In this research, the success of following Design and Build procurement method is investigated through analysing the feedback of undertaking stakeholders in the Construction industry in Sri Lanka by questionnaires. In this survey, the surveyed parties include professional from commercial houses and building houses ( contractors ) who handle both private and public sector undertakings in Sri Lanka. Furthermore, the popularity of the procurement method adopted in Sri Lanka is discussed the addition a better apprehension of tendencies of the building industry.

The features of different Design and Build procurement methods are besides introduced and discussed. Apart from the above aim, this research besides provides information for the stakeholders in the building industry for

reexamining and choosing an appropriate procurement method for the upcoming undertakings severally. Keywords: Design and Build, Procurement, Key success factors

## **Recognition**

This research would not have been possible without the support and aid and encouragement of many people. I wish to show my sincere grasp to my thesis supervisor Prof. Chitra Weddikkara for her counsel, aid and encouragement. A particular Thank you must be given to Mr Indunil Senevirathne, Head of the Department, Department of Building Economics, Dr Sepani Senarathne, Academic Coordinator for Research and Dissertation, and Dr. Yasangika Sandanayaka, for their parts. The Architects, Quantity Surveyors, Engineers, Project Managers and Builders for supplying the necessary information for this research Without their aid and aid, this thesis would be harder for me to finish.

Last but not least, my thanks besides to those who have straight or indirectly gave their helpful advice and remarks for the success completion of this thesis.

## **Chapter 1 Introduction**

### **1.1 BACKGROUND TO THE STUDY**

Over the old ages, the building industry has become familiar with contractual agreements for apportioning duty and hazard of all the parties under the traditional procurement method. However, many employers have become progressively disgruntled with the traditional signifier of undertaking

bringing and seek other methods of procurement, such as design and construct to run into their more exacting demands. With the assorted functions of shopkeeper and design adviser under the Design and physique system, its contractual agreement is drastically different to the construct in traditional procurement method. Indeed it tends to change by reversal the hazard and the function of squad members in a development undertaking.

The design and physique construct, as originally conceived, was based on the construct that a individual house had the in-house staff and expertness to execute all planning, design, and building undertakings. Later, increased involvement in the construct had applied scientists, designers, and conventional contractors seeking to vie with the original design and build houses to run into the turning involvement by proprietors in the undertaking bringing procedure. In Sri Lanka, over the last decennary many building undertakings have been implemented utilizing the traditional procurement method. But in recent old ages, design and construct procurement method has become popular in Sri Lankan building industry as an option to traditional procurement method. Harmonizing to research carried out by Rameezdeen and Ratnasabapathy ( 2006 ) traditional procurement method is widely adapted from 1970 ' s to 2000 ' s in Sri Lanka. However, disadvantages were found for utilizing this method. It has been started to seek for the alternate method to work out those jobs. The Design and Build procurement method is widely used in the public undertakings ab initio in the Sri Lankan Construction Industry.

The mature of utilizing Design and Build procurement has been entered into assorted private undertakings late such as Residential/Condominium Development Projects, Hotel Development Projects, Entertainment Facility Building, etc.

## **1. 2 RESEARCH OBJECTIVES**

The chief aim of this survey is to measure the success of design and construct procurement method in Sri Lanka. This survey besides supply penetrations into the factors that influence the version of design and construct method. A successful procurement method should take to efficient usage of money and resources and maximization of benefits.

To understand the success of the design and construct procurement method, the significance of success should be identified. The significance of success may differ to employers. It is hard to mensurate the success of the undertaking but the end achieved with the Employer ' s demands will be regarded as success of the Design and Build undertaking. Within this aim the undermentioned aims are pursued: To understand the tendency for the Design and construct procurement method in Sri Lanka To place the factor that affects the choice of the procurement method. To happen out the ground for utilizing the Design and Build procurement method.

To analysis the consequence from the questionnaire to understand the current state of affairs of the Design and Build procurement method. To sum up the findings from the questionnaire to obtain the advantage anddisadvantages for utilizing design and construct procurement method.

**1.**

### **3 METHODOLOGY OF STUDY**

The methodological analysis is designed to accomplish the aforesaid aims. The first measure is to apologize the issue to assist put up the subject of survey. Then the purposes and aims are set. For the cognition acquisition stage, the literature in connexion with this survey is reviewed including stuffs published in diaries, books, newspapers, standard contract signifiers, conference documents, and web sites. As an empirical survey, questionnaires and semi-structured interviews are conducted among building industry professionals. The information collected are be analyzed and decisions are drawn with mention to the aims.

#### **1. 4 Decision**

The introductory chapter presents the grounds for the survey and it discusses the background, placing the grounds for the design and physique is going a popular alternate method in Sri Lanka. It provides chances for invention and excellence while honoring both employers and contractors who choose that path. The ground to accommodate better procurance methods is to optimise the undertaking design, agenda, and quality while furthering pleasant and hence constructive working relationship among employer and contractor.

Methodology of survey is indispensable critical to obtain high quality consequences. Methodology used in this survey is literature reappraisal, informations aggregation, information analysis, and drawing of decisions. The literature reappraisal is used to designation of the issues ; questionnaire

is used to roll up the informations while interviews are conducted to roll up informations related to the instance survey. Statistical and analysis and qualitative interviewing method were used to analyse informations.

Finally, the decision and recommendation with mention to the aims are created, subsequent to the analysis from the interviews and questionnaires.

## **Chapter 2 LITERATURE REVIEW**

### **GENERAL**

The design and construct procurement path changes the traditional sequence of work. It answers the Employer ' s wants for a single-point of duty in an alleged effort to cut down hazards and overall costs. It is now normally used in many states and signifiers of contracts are widely available.

Design-Build is sometimes compared to the " maestro builder " attack, one of the oldest signifiers of building process. Comparing design-build to the traditional method of procurance, the writers of " Design-Build Contracting Handbook " noted that: " from a historical position the alleged traditional attack is really a really recent construct, merely being in usage about 150 old ages. In contrast, the design-build construct — besides known as the " maestro builder " construct — as been reported as being in usage for over four millenary. " ( Songer, 1996 ) .

The disadvantage of the traditional procurance method had been identified in many studies. Harmonizing to Lathem Report ( 1994 ) , it stated that the traditional method has the job of adversarial and inefficient manner of making things and separation of the functions and duty of squad members.

Harmonizing to the Construction Industry Review Committee Report ( 2001 ) stated that a high grade of atomization with an adversarial civilization and a contractual and confrontational civilization would be developed. The alternate procurement method would be sought for work outing those jobs. Describing “ Design and Build ” as a “ feasible alternate method ” , Songer and Molenaar ( 1996 ) concluded that there are a figure of advantages associated with Design and Build such as: cost nest eggs, improved constructability, clip nest eggs and claim decrease. From the Employer ‘ s position, the individual point of duty is the most attractive benefit derived from the D & A ; B procurement attack ( Chan 2000 ) .

With the support of instance surveies and quantitative informations, Hale et Al. ( 2009 ) pointed out the Design and Build is superior to the traditional procurement system hence recommended to utilize Design and Build attack in both public and private sectors. Levy ( 2006, p. 197 ) even suggested that “ the design-build bringing system appears to be a perfect vehicle by which to prosecute sustainable or green edifice building ” .

Harmonizing to Chan and Chan ( 2004 ) , the completion clip as it relates to rush of a undertaking depended on the procurement method adopted for the undertaking. They attributed the slow hold observed in one of the undertakings to be due to the usage of the traditional procurement method. However, they recognize the possibility of other factors playing a function that it was noted as the undertaking who has suffered holds ; obtained better consequences in footings of cost compared those obtained through the method of design and construct methodThe increasing the complexness of



the undertaking, the Employer would be hesitated to how to cut down the clip for design and the clip for building. The Employer was willing to seek for the alternate method to cut down the clip of the design phase and the building clip and better the public presentation of the undertakings. There are many alternate procurement methods have been developed in recent old ages such as Novated Design and Build and Enhanced Design and Build. The traditional procurement method is non the lone pick for the Employer. Design and physique is now one of the most often used procurement paths in building and it is a extremist going from the traditional design-bid-build method. The usage of design and physique is on the addition with many Employers comprehending it as supplying better value for money and giving rise to less differences than other procurement methods.

As per the studies of Royal Institution of Chartered Surveyors, 2004, new procurement tendencies can be identified which may be associated with the roar period in building in the early portion of the decennary and it clearly shows that the Design and building has become the individual dominant method since the old study in 1995, it was the traditional method. Under a design and construct contract the contractor assumes primary duty for the design of the development, in add-on to its traditional function to provide work and stuffs. The contractor engages the design advisers, or more normally, has the assignments of the design Consultants novated to him.

## **2. 1 THE DEFINITION OF THE DESIGN AND BUILD PROCUREMENT METHOD**

“ Design and physique is and agreement in which a edifice contractor enters into a contract with you to plan and build your new edifice. It is the simplest attack, as one house is responsible for bring forthing the edifice you want instead than this duty being divided amongst several houses, as is the instance with every other attack. ” ( Sarah Peace and John Bennett, How to utilize a design physique attack for a building undertaking, CLOB, P2 )Masterman ( 1992 ) province that the term Design and Build has about been nem con interpreted and defined as being an agreement where one catching organisation takes exclusive duty, usually on a ball amount fixed monetary value footing, for the bespoke design and physique of a Employer ‘ s undertaking. This contains three chief elements: the duty for design and physique, contractor ‘ s reimbursement is by and large by agencies of a fixed monetary value ball amount and the undertaking is designed and built specifically to run into the Employers ‘ demands.

Harmonizing to David Chappell ( 1997 ) , Design and Build contracts place duty for both design and hard-on in the custodies of the contractor one point of duty for everything. In this system contractor will transport out two maps: design and concept. In other definition, design and physique is an agreement where one organisation design and physique to the house order for the Employer to a individual fiscal dealing. The Chartered Institute of Building ( CIOB-1983 ) defines Design and Build as the procedure where the Employer trades straight with the contractor for the complete edifice and it is the contractor who is non merely responsible for but besides coordinates the

separate design and physique procedure, including battle of the design squad who are, hence contractually linked with the contractor and non the Employer.

The diagram below shows the contractual relationship in the design and physiques procurement method. ClientDesign BuildContractorIn-house interior decorators orexternal advisersSpecialistContractorsBeginning: Sarah Peace and John Bennett, How to utilize a design physique attack for a building undertaking, CLOB, P2In pattern, Design and Build procurance is by and large structured in one of two ways ; The Employers employ a dedicated Design and Build organisation with its ain in house design squad. The Employers prosecute a general edifice contractor who employs external design adviser members of the contractor ' s squad for the continuance of the undertaking.

## **2. 2 STRENGTHS OF DESIGN AND BUILD PROCUREMENT SYSTEM**

As the Design and Build defined, it is hence of import to uncover the strength or advantagesof Design and Build as procurance system.

One of the outstanding characteristic of Design and Build is to supply a individual point duty. This is achieved by apportioning all design duty and liability to the contractor entirely. The proprietor may hold more design options to take from the several design builders who enter the stamp. Owner will be given to hold fluctuation of design thoughts together with the expected cost that was proposed based on his demands. Unlike traditional attack which merely appoint a individual unit of design squad to come out

with the design thoughts, Design and Build will bring forth much more different design thoughts from the design builder who enter the stamp ( P. Chan et al., 1997 ) .

The proprietor ' s administrative loads may be reduced because the procurance of design and physique services is consolidated into a individual choice procedure. After award of the Design and Build contract, the proprietor will non be required to pass clip and attempt coordinating and interceding between separated design and physique contracts. While the procedure does necessitate the proprietor to supply prudent inadvertence of the design and physique procedure, this duty is considerable less clip consuming and exposes the proprietor to far fewer hazards than the traditional attack ( P. Chan et al.. 1997 ; Dennis Turner, 1986 ) .

## **Figure 2.**

**0: ( A ) : Individual point duty – D & A ; B Contract, ( B ) : Fragmented**

**duty – traditional contract ( Beginning: Bennett and Grice, 1992 )**

In add-on to the individual point duty, cost and completion clip is house in the Design and Build procurance method. This means the Employer knows his entire fiscal committedness in the initial phase of the undertaking, provided he does non present any alterations throughout the undertaking. The Design and Build entity is responsible for quality, budget, agenda, and public presentation of the completed installation. With the individual point of contact, Employers can concentrate on definition of demands and timely

decision-making instead than on coordination between interior decorator and contractor.

Besides, the Design and Build entity has entire duty for the finished merchandise and can non switch design mistakes of building defects to another party. Therefore, it will probably to stop up with the expected or higher quality of end merchandise. Unlike Design and Build attack, traditional attack contracts rely on restrictive diction, adversarial audit and review demands and the legal system to achieve project quality ( Jeffrey L. Beard et al. , 2001 ) . Cost has ever become the cardinal considerations impacting acceptance of Design and Build procurance method. Whilst undertaking clip is comparatively easy to construe and possible nest eggs clearly identified, undertaking cost is more equivocal and hence hard to measure.

A outstanding consideration for the Employer, in any procurement signifier, is that concluding cost does non transcend the undertaking budget. In this regard, Design and Build surely presents a better opportunity of the Employer obtaining his completed edifice within budget. Jerry Adanison ( 2001 ) , explained that several fiscal considerations make Design and Build desirable. Private sector have implement Design and Build for fiscal grounds. Completing a undertaking rapidly can salvage Owners used to finance undertakings. On the inquiry of cost, existent cost nest eggs can besides be made in Design and Build. Harmonizing to Mastermann ( 1992 ) , when utilizing this system, the initial an concluding costs are lower than when utilizing other methods of procurance because of lessened design costs, the

integrating of the design and build elements and in built build ability of the elaborate design. Cost nest eggs may besides ensue in timesaving.

The overall effects is decrease in the Employer ' s funding charges, lesser consequence of rising prices and faster edifice operation, which, in a commercial context, produces an earlier return on the capital, invested, ( Frank 1998 ) .

## **2. 3 FACTORS CONSIDERED IN PROCUREMENT METHOD SELECTION CRITERIA**

### **Requirements of the Employer**

The successful of the procurance method should carry through the demands of the employer. The aim of the Employer should be identified. Employer would necessitate the best design for their undertaking and run into his demand stated in the Employer ' s demand. Time should be every bit fast as possible for the building period. The cost of the edifice should be every bit lower as to fulfill his demand. The Employer would prefer to minimise the contractual hazard to avoid the unneeded problem.

### **Time**

As clip is money, the continuance of building period of the undertaking is really of import. " Time at big " , the clip disbursement on the planning, building and development would impact the economic graduated table of the Employer. The Employer would seek for the shorter building period to gain for the greatest net income. The time- related cost point such as the cost of site office, human resources would increase as the continuance of the

building period become longer. The early release the edifice, the greater net income for the Employer.

## **Quality**

The quality of the craft and the quality of stuff is one of the chief concerns for the Employer in general. The quality of the edifice should run into the demand stated in the specification of the contract.

## **Cost**

The development cost, the building cost and the operation cost are the concern of the Employer.

They wholly affect the net income of the Employers. The building cost is the cost for the edifice building such as stuff cost, works cost, labour cost. The operation cost is the running cost for the edifice such as care cost, direction cost.

The development cost is the land cost, building cost and other all outgo which has paid for the development.

## **Communication**

One of the major ground for taking design and construct agreement is to profit from the good communicating that can happen between the design squad and the building squad ( Gould, 2003 ). Many of the big design and physique companies specialize in peculiar countries and have developed a smooth flow between the design and build stages of the undertaking. This coaction allows the undertaking to be easy fast-tracked, cutting down on

overall agenda for the undertaking. Direct contact between the Employer and the contractor as provided a Design and Build system lines of communicating and enables the contractor to accommodate more quickly to the Employer ' s demands. Integration and encouraged inherently within the system ( Griffith, 1989 ) . The Employer and contractor will pass on closely during the procedure of the undertaking. Communication between them will get down at the get downing phase of the undertaking.

Therefore, in design and construct it provides the Employer and contractor an chance to interact more frequently and more straight than traditional contract. In general, this agreement allows easier incorporation of alterations due to scope or anticipate conditions since their coordination occurs within the same contractual entity. The Employer is less to a great extent involved and sits outside the direct twenty-four hours to twenty-four hours communicating between interior decorator and builder. This keeps proprietor staffing to a lower limit and puts the full duty for good communicating and job resolution.

## **Hazards**

The Design and Build contract transportation more hazards to the contractor than any other building contract. Among a assortment of hazards, a contractor normally takes on many bad hazards. Hazards that can change in incidence between the parties as they wish. Bad hazards can be within or out with the control of a contractor ( Turner 1990 ) .



However, the suitability of a undertaking to the Design and construct attack must be carefully undertaken by guaranteeing that the contractor is able, willing and has relevant experiences to command the hazard satisfactorily, otherwise they may go through these back to the Employer ( Hogg & A ; Morledge, 1995 )

## **Figure 2. 0: Hazard allotment for each type of procurance system ( Hogg & A ; Morledge, 1995 )**

### **2. 4 THE FACTOR AFFECTING THE SUCCESS OF THE DESIGN AND BUILD**

#### **2. 4. 1 THE PROJECT CHARACTERISTIC**

Large and complex undertakings take longer building continuances.

It is hard to utilize the design and construct procurance in such undertakings. Because it is unjust for the contractor to take hazard on the stuff rising prices on the ball amount fixed monetary value contract. Therefore, the size and the complexness of the undertaking should be considered.

#### **2. 4. 2 THE CONTRACTOR SELECTION**

Harmonizing to Sarah Peace and John Bennett, it is really of import for the choice of the contractor to treat the design and physique undertaking. From the figure shown that the design and physique undertaking in increasing because of the authorities is willing to utilize Design and Build procurance method. As the following design and construct procurement method by the Government, there is the system for choice of the Contractor as per the “ Procurement Guide Lines ” The choosing the Contractor is non merely

concern the stamp monetary value, but besides the quality Time, Contractor ' s fiscal position, possible contractor with good reput e, manpower good record for the old undertaking as per the pre-qualification taging strategy of National procurance usher lines.

Therefore, the contractor who meets the Employer ' s demand for clip and quality at the best monetary value would be selected.

### **2. 4. 3 THE EMPLOYER ' S REQUIREMENT**

The Employer should to the full province their demand, thought and specification of the craft in the Employer ' s demand. The more item of the Employer ' s demand is, the fewer differences will be occurred in the ulterior phase. The design of the edifice and the criterion of the edifice is harmonizing to the Employer ' s demand.

The Employer should understand what he needs in the edifice and the thought should be to the full explained in the Employer ' s demand. The proposal responded from the Contractor should be carefully checked by the Employer ' s representative. Once the Employer accepts the proposal from the Contractor, the contract will be formed between them. The design of the edifice and the building method will non be changed which stated in the contractor ' s proposal. The alterations by the Employer would do the great sum of the fluctuation. Therefore, the recognized proposal should be to the full understand by the Employer which is suited to his thoughts.

Harmonizing to Ashley et Al. ( 1987 ) identified 4 factors lending to project success and grouped them into five countries including ( 1 ) direction,

organisation and communicating ; ( 2 ) range and planning ; ( 3 ) controls ; ( 4 ) environmental, economic, political and societal ; and 5 ) proficient. The deductions of the Employer should develop a thorough undertaking program in which the range of work is clearly defined, and the contractor should understand and perpetrate to the accomplishment of undertaking aims. The contractor ' s capableness and experience in pull offing Design and Build undertaking is critical to project success and undertaking squad members ' committedness toward the undertaking ends is besides of import. Songer and Molenaar ( 1997 ) identified 15 features of successful Design and Build.

They found that the top five of import undertaking features were chiseled range, shared apprehension of range, proprietor building edification, equal proprietor staffing, and set up budget. Although the Design and Build undertakings are expected to present the undertaking faster and cheaper every bit compared to the traditional command and build undertakings, non all the Design and Build undertakings can truly carry through it. Many empirical surveies have been conducted to analyze the impact of assorted undertaking success factors such as the survey of factors for a successful public sector Design and Build undertakings by Songer and Molenaar ( 1997 ) , survey on designers ' and builders ' positions on Design and Build procurance method in Hong Kong by Mo and Ng ( 1997 ) and many others ( Albert P. C.

Chan et al. , 2001 ) . Consequently Chan et al.

, ( 2001 ) has developed a series factors lending to the success of Design and Build undertakings. These factors are the responsibilities, duties and capablenesss of different undertaking participants including end-users, contractor, designer and design advisers in Design and Build undertakings.

## **Decision**

The purpose of this chapter is to show an overview of the literature published on the topic of ' selecting the procurance method from the current building industry ' ; The aim of the Employer in footings of clip, cost, quality and hazard would be found out besides. And the factor that may find the successful of the procurance method would be identified. They are the undertaking characteristic, the contractor choice and the employer ' s demand. In general, it can be summarized that Design and Build provides individual point duty for the whole design and physique.

Contractors, who are responsible for the execution of the undertaking, have power to command all over the undertakings. This nonetheless does non discourage the engagement of the Employer. The Employer ' s demand and demands are ever been taken into consideration, which this consequently presents singularity of the system. In decision, it is indispensable that whoever truly want to secure Design and Build method need a thorough apprehension of the types and features of that sort of procurance. Therefore, benefits of Design and Build can be exploited.

Many surveies besides showed that the feature of Design and Build that make Design and Build different from other procurance system in offering

individual point duty, fixed clip and money, communicating, allotment of hazards and others. Getting success in Design and Build undertakings enables an confidence of acquiring the undertaking completed at the right clip and within allocated budget. The Design and Build procurance system has better clip public presentation and cost benefits, which are basically what the end-users are concerned about. This research can be akey to measuring the public presentation degree of Design and Build undertakings, and the undertaking participants can larn about the of import factors for puting up an effectual direction system to turn Design and Build undertakings with first-class public presentation.