

TOWARDS A REFLECTIVE NIGERIAN SOCIETY: THE GAP
BETWEEN TEACHING AND RESEARCH IN BUILDING
TECHNOLOGY FROM FACILITY PROCUREMENT
PERSPECTIVE

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Abstract

The dynamism of the society in a broader sense of perception has reflected the input and output of teaching and research works in the global dimension. Teaching and research are simultaneously changing and modifying the face of the society thereby making imposed natural limitations and barriers on man surmountable for his comfort. The mentality of man is also kept on alert to articulate what best actions to take within seconds in the area of teaching and research to ensure that things work better for man's existence to reflect the dynamism and reality of a contemporary society. This paper is galvanized to generate revolutionary innovations made in the building sector as a result of teaching and research in the global world and in Nigeria in particular. It looks at various procurement methods adopted in Nigeria vis-à-vis traditional, modern and post-modern procurement methods, their advantages and disadvantages, constraints and challenges. It concludes by recommending ways of promoting these procurement methods in Nigeria for optimal performance.

Academic Scholarship

Teaching and research are bedrocks on which innovational changes, advancement in knowledge and all sorts of technological Integrations in all spectra of human endeavour are anchored. The impact of accelerated changes brought about by teaching and research has also brought about tremendous changes and various innovations in the building sector especially in procurement of facilities.

The variants of procurement methods available today metamorphosized from the need to improve construction project delivery, that is, project completion within budget and time. According to Daniel (2006), the emphasis is on optimizing all parameters involved in project delivery namely, time, cost and quality. Procurement of projects within these constraints has continued to be a challenge to the design team, the contractors and managers of investments (Adesanya, 2008).

Traditionally, construction projects start with the client's brief on which design are based. The Architect and engineers prepare designs, in collaboration with quantity surveyors who advise on the cost implications, of design variables. Tender process afterwards produces the contractor for the execution of the work. On the Award, the successful contractor executes the work as designed under the supervision of the consultants. Thus, the approach separates the design, tendering process and construction as separate tasks. This separation of activities also led to sequencing of activities in which design is completed before construction commences.

Turner (2006) opined that the main aim of the construction industry is to deliver and maintain the built environment. The built environment comprises housing, educational, industrial, commercial and infrastructure facilities. Infrastructure is a generic term covering the provision of electricity, communications, water, sewage, gas, air, railways, harbours, roads and the like Office of National Statistics (2002).

Interestingly, it is worthy to note that all these variants and changes in procurement system vis-à-vis traditional, modern and post modern procurements were made possible by teaching and research works.

Traditional Procurement Methods

The traditional method of procurement as the name implies is a project procurement method where the three sequential phases of design, bid and build are identified as separate tasks. It is traditionally referred to as the competitively bid contract. This method allows for all contractors that feel competent to bid for project in

a free and competitive atmosphere similar to competitive market environment (Babatunde, Opawole and Ujaddughe, 2010).

Types of Procurement Methods

Ogunsanmi and Banisile (1997), and Ashwort and Hogg (2007) defined procurement method as the management of the total process involved in construction project delivery. According to Ashwort and Hogg (2007), different variants of procurement are available for meeting different clients' needs and projects specifics. Researchers, however, often differ in these classifications of procurement methods. Ramus (1996) showed the classification commonly used in practice, often combine the characteristics of two or more types. Nonetheless, studies including Seeley (1997), Turner (1997), and Ashwort and Hogg (2007) among others classified construction procurement method into two broad categories as: traditional procurement and non-conventional procurement method.

The main variants of traditional procurement method are bills of firms quantities, bills of approximate quantities, drawing and specifications, schedule of rates, cost reimbursement and labour only.

Traditional methods of procurement as recorded by Ogunsanmi (2006), Akinola, Okolie and Akinola (2013) and Ibrahim (2007) have a lot of advantages attached to it. They include:

- It is the most common procurement method used by facility procures in Nigeria and other parts of the world like Britain and commonwealth countries.
- Traditional system of procurement has stood the test of time and it is understood by most clients as they know their financial commitment.
- Here the architect is given the freedom to conceive and develop the design without excessive time or economic pressure provided the cost ceiling does not exceed the client's budget.
- The project cost can be estimated, planned and monitored by Quantity Surveyors from the inception stages to the completion of the project.
- The system makes it possible for the architect to introduce other professionals in the building industry.

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- He also appoints other specialists (main contractors and suppliers) relevant to the project work.

However, traditional methods are characterized by the following short comings:

- The separation of design and construction process tends to produce negative attitude between the designer and the contractor. This reduces team spirit which is vital for any project.
- Lines of communication between the parties tend to be slim and the interest of all the parties involved may be jeopardized as a result of that.

This system of procurement has proven to be unsatisfactory for large and complex projects that may require advanced management structures and technology.

The above outlined short-coming of traditional procurement methods have provoked teaching and research works which gave rise to more organized, articulated and more modern procurement methods in Nigeria and other countries of the world.

Modern Methods of Procurement

This method can also be described as non-conventional procurement methods. Ogbonna and Kalu (2012), Babantunde et al 2010 and Ibrahim (2007) categorized this procurement system generally called Design and build into:

- Building – Operate – Transfer (BOT)
- Build-Operate-Own (BOO)
- Build – Transfer – Operate (BTO)
- Build – Lease – Transfer (BLT)
- Design, Build, Finance and Transfer (DBFT)
- Design, Build, Finance and Operate (DBFO)
- Build, Rent and Transfer (BRT)
- Build, Own, Operate and Transfer (BOOT)
- Renovate, Operate and Transfer (ROT)
- Investment Management and Investment Services (IM/IS)
- **Build – Operate – Transfer (BOT):** This system allows the developer a use of the project for a certain period of time before transferring the project to the government or the owner.

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- **Build, Operate, Own (BOO):** The private sector (Concession Company) is responsible for design, finance, construction, operation and maintenance of the facility. The ownership is not transferred.
- **Build, Transfer, Operate (BTO):** This variation relieves the consortium of the insurance cost for operation.
- **Build, Lease, Transfer (BLT):** Under this variation, the developing firm or consortium is allowed to lease out the completed facility and recoup her money before transferring the completed facility to the owner at an agreed time.
- **Design, Build, Finance and Transfer (DBFT):** In this system, the developer develops the structure using his own generated finance, after construction and a certain agreed period of ownership transfers the whole facility back to the government.
- **Design, Build, Finance and Operate (DBFO):** In this system, the government owns the project but leases it to the consortium.
- **Build, Rent and Transfer (BFT):** This system allows for the consortium to obtain payment from the government before the actual transfer of the project.
- **Build, Own, Operate and Transfer (BOOT):** Under this variation, the developer is allowed full unallowed ownership of the completed structure for a specific period of time at the end of which he relinquishes his full right to the actual owner, while the building is still in completely functional state.
- **Build, Own, Operate, Subsidize and Transfer (BOOST):** In this system, government provides incentives to users of the completed project in other to make it financially viable for the private consortium.
- **Renovate, Operate and Transfer (ROT):** Under this variation, the developer renovates an already existing building which he is henceforth permitted to operate so as to recoup his investment before transferring it back to the original owner. This variant is relatively different from others in that the structure in question is already in existence as against other variants in which the structure is developed by the developer.

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- **Build – Lease, and Transfer (BLT):** Under this variation, the developing firm or consortium is allowed to lease out the completed facility and recoup her money before transferring the completed facility to the owner at an agreed time.
- **Investment Management and Investment Services (IM/IS):** This variation allows a development firm to complete the construction of the facility while independent investment management firm manages the facility on behalf of both parties for the period of occupancy by the developer for the purpose of recouping the capital invested by the developer and for ensuring that the facility is in good standing by the time of handing over to the owner at the expiration of the lease.

Some of the advantages or merits associated generally with these methods of procurement include but not limited to the following:

- Large project such as Power Stations, Air Port, Oil Refineries and similar complex utilities are viable under these methods of procurement.
- Risks normally associated with this procedure are always shared among parties to the procurement process.
- It generates spirit of co-operation and the contractor is encouraged to put issues to the client on the on-set and continues with open attitude throughout the contract.
- It also incorporates agreement that allows the sharing of the benefits of the cost savings between the client and parties to the contract. This is achieved largely through open access to plans, estimate, cost and financial account.
- Construction products can be produced on large scales because the methods make use of industrialized construction materials i.e. Off-site prefabrication which are carried to the site for immediate usage without delay.

However, the following disadvantages are associated with these modern methods of procurement system:

- The capital involvement of this method is colossal. If such amount is not provided by the client, this may lead to abandonment of projects.
- Duration for completion of project may be too long and this may affect the project budget due to fluctuations in prices of building/constructional materials.

- Before a project is finally completed, the finished facility may suffer functional and economic obsolescence.
- Straight forward issues as accounting practices, production management, personnel and industrial relation policies may create potential areas of disagreement.

Post – Modern Methods

This post-modern methods of facility procurement are products of this age of project management (Maylor, 2003) and cooperate relationship re-engineering resulting in the contemporary paradigm shift in procurement risk management that is, from risk allocation and transfer to risk absorption and sharing. This shift has given rise to the models now recognized as alliancing, partnering, package deal, management contracting, construction management, Public Private Partnership (PPP) and new engineering contracts collectively described as discretionary procurement methods.

The back concept in these approaches and methods is that the pooling of resources in various forms by stakeholders according to their strength and operating advantages and the recoument is done pro-rata. Konchiar and Sanvido (1998) recorded as an advantage of this method that projects are delivered 33% faster than the traditional methods of procurement. Akinola et al (2013) reported that a significant saving in time by using these modern methods as against the traditional contracting methods. This is where teaching and research works play a pivotal role in finding better procurement methods that suit the contemporary and dynamic society.

Constraints and Challenges of Procurement Methods in Nigeria

In Nigerian business environment, the choice of choosing a particular procurement method requires a lot of considerations in order to minimize risks associated with any of these procurement methods. The following outlined below are constraints and challenges of procurement methods in Nigeria:

- In traditional method, where the architect is fully in charge, it is possible for him and the main contractor and/or subcontractors to collude and inflate the initial estimated cost of project thereby making client pay more than expected.
- Design and build method, it is most likely for the contractor to use substandard building materials since his motive is to maximize profit. Furthermore, the contractor may build not in accordance with specifications.

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- Advanced procurement methods such as project management, management contracting, construction management, private finance initiative, etc need sophisticated equipment. The use of these equipment implies high production cost which may make procurement under this arrangement unaffordable by the poor except the government and other big organizations.
- Variations introduced later during construction work may alter the original design and this attracts extra cost. In addition, fluctuation of prices of building materials contributes to additional cost of procurement budget.
- The procured or finished construction products are prone and susceptible to natural disasters such as storm, hurricanes, fire, earthquake, etc, which may destroy the products completely thereby causing a tremendous cost to the procurer.
- Generally speaking construction work is affected by weather elements. Duration of building project may be delayed which could result to high cost of procurement.

Conclusion

This paper has exposed various procurement methods and strategies available to all Nigerians. The fact remains that each package and arrangement has its cost implication, merits and demerits. A rational economic and prudent procurer should select the method that gives him/her the highest cost advantage or least comparative cost disadvantage relative to other methods.

Recommendations

Teaching and research in building technology has ushered in new dimensional approach in facility procurement. For this development to be significantly sustained in building industry, the following recommendations are offered:

- In traditional method of procurement, a client is advised to appoint a reliable and trustworthy architect who can stand for him and protect his interest without colluding with contractors and subcontractors.
- There should be contractual agreement between client and contractors whereby terms and conditions of contract are well spelt. This will put the contractor on check to build according to specifications in design and building arrangement.
- Care should be taken at the preliminary stage as to avoid unnecessary variations which are “candidates” for cost increase above targeted project budget.

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- Adequate arrangement should be made to complete the project within project stipulated period. This might reduce effect of price fluctuation of building materials.
- Critical activities ought to be identified which should be completed immediately to avoid time and cost overrun.
- An independent project manager should be appointed by the client to co-ordinate the activities of other teams and prepare work schedule for successful execution and completion of project.
- Since building construction is adversely affected by weather elements, it is highly advisable to adopt a modern technique of construction called “industrialized building” whereby most building components are fabricated in the industries outside the construction site and assembled to the site for use.
- More importantly, there should be need to insure procured construction products since they are susceptible to natural disasters.

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