



Construction Externalities: A Theoretical Insight and the Nigerian Scenario

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Abstract

Very little is known about the subject of construction externalities, especially amongst stakeholders in the Nigerian construction industry and built environment, yet its existence and effects are palpable. Hence, the study, via relevant literature and personal observations sought to provide; first, a theoretical understanding of the nature of construction externalities; its constituents or composition as well as its effects, and secondly, to point out the level of awareness on the part of stakeholders and the manner or extent to which they have been addressed or considered in Nigeria. Ultimately, this paper presents as a solution to efficient and balanced allocation of resources, realistic taxation and better economic planning by the Nigerian government; the need to apprise the citizenry of the benefits and adverse effects of construction externalities.

Keywords: Built environment, Construction externalities, Construction industry, Construction stakeholders, Economic planning, Nigeria.



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1. Introduction

The construction industry is one of the most important sectors of the economy (Mu'azu, 2002; Nigerian Institute of Building, 2002) and plays a vital role in meeting the needs of society and enhancing the quality of life. According to Ebohon and Rwelamila (2002) the construction sector, relative to its level of development accounts for more than 60 percent of gross capital formation in most countries and defines the physical infrastructure upon which effective growth and development is achieved. Construction activities extend beyond the erection of houses, hospitals, schools, offices and factories to civil engineering works such as roads, bridges and communication infrastructure.

For some time now, this song; of the significant position of the industry, its numerous benefits and contributions to users, beneficiaries and the economy at large has been sung, but little or no cognizance or attention has been paid to the fact that activities of the industry, as well as its products brings with it subtle, hidden and sometimes intangible effects on the social, economic, environmental life (Rodrigue, 2013) often termed externalities or neighborhood effects, or spillovers, which affect third parties or non users (Friedrich and Milton, n.d).

The European Commission (2005) after an extensive research, opined succinctly, that externalities are related to social welfare and the economy in no small measure. It has also been defined as costs or benefits that result from an activity or venture that affects an otherwise uninvolved third party who did not choose to incur that cost or benefit (Externality, 2013). It is also regarded as an action by a person or firm which affects another person or firm and for which the interaction is ignored (Externality, n.d).

According to Zakaree (2012) externalities may be positive (economic externalities) or negative (non-economic externalities). Positive externalities or beneficial externalities or external benefits or external economy are benefits enjoyed by a third party as a result of an activity or product. Such third parties include any individual, organization or property owner that is indirectly affected (Positive Externalities, n.d) while individuals who benefit from positive externalities without paying are considered 'free riders'.

While positive externalities are the common thread that run through economic consideration of the environment (Positive Externalities, n.d) negative externalities are cost of economic activities like construction and housing activities that are imposed on others like environmental damages, cost of healthcare incurred as a result of pollution and many more.

Positive externalities, such as better habitat, population dispersal, improved hygiene, decongestion, increased market value of properties (Externality, n.d) which provide considerable benefit to others which they do not pay for, will be in the best interest of the Nigerian government to promote. Government needs to compensate the initial propagators or construction firms or subsidize the clean and healthiest methods of construction and disposal of waste. This can give impetus to new working and disposal methods and technologies, which will in turn promote a more sustainable environment (European Commission, 2005).

Negative externalities or external costs or external diseconomy are activities or products that impose a negative effect on the third party (Externality, 2013). It has also been defined as a cost that is caused by some economic activity but which is not paid for by the entities that are directly involved in the activity (Namish, n.d). Malpezzi (1996) outlines a number of negative externalities related to both housing and construction such as air, noise, water, soil pollution that cause green house emissions and climatic change which in turn affects humans, existing buildings and materials. Others, such as land takes, congestions, accidents, additional demand for civic amenities, falling real estate prices and many more. Such negative externalities have taken a huge toll on the Nigerian environment, such that adequate attention and consideration needs to be accorded it.

Worthy of note is that externalities becomes a serious problem when such effects are not internalized or taxed or paid for, especially when the actual or reasonable monetary cost is unknown or cannot be quantified thus, giving rise to inefficient allocation of overall resources (Quantifying Environmental Externalities, n.d).

Compounding these problems, especially in the Nigerian economy, firstly is that externality issues are relatively unknown to a majority of the populace with little or no action taken when such effects lead to economic, social, health and environmental losses. Second, externality is known probably to a limited extent to appropriate public or government authorities, but defaulting construction firms are not charged appropriately with negative externality issues, because they are not included in the current construction tax system. Third, externalities are not compensated for or subsidized for compliant firms.

Undoubtedly, construction consumes a large part of the resources of any nation. Considerable amounts of time, money and effort are spent by the Nigerian government in this sector. Such huge resources may however, not be entirely justified especially when the costs of negative externalities: costs of health, social, economic and environmental damages outweigh the benefits of construction or its products.

The primary import of this study therefore, is to establish a theoretical basis for developing a way or ways of striking a fair balance (in economic terms) between the benefits of positive construction externalities and the adverse effects of the negative externalities. The research thus has the following as its focus:

- Promoting Government, public and contractors awareness and providing an understanding on the existence and effects of construction externalities to enable; first, the public to develop confidence to report to the appropriate authorities and secondly, to give the government better knowledge on how such externalities could be charged on defaulting firms and thirdly furnishing construction firms that adopt healthy and safe working methods with more information on the external benefits of their activities and the need to receive compensation or subsidies from the Government, thus encouraging them to develop better and cleaner working and disposal methods.
- Providing a theoretical basis for further research in providing reliable statistics or procedures of quantifying and monetizing construction externalities for use by Nigerian tax authorities in making objective decisions in formulating construction tax or tax ceilings. In other words, to advance realistic procedures or methods via which negative construction externalities can be quantified or have monetary values attached with a view to obtaining reliable statistical data for realistic taxation and better economic planning.

2. Problems of Construction Externalities in Nigeria

In a developing country like Nigeria, the subject or issue of construction externalities is one that is relatively unknown to the average citizen, constructor and even the public authorities. This ignorance on the part of third parties have resulted in lack of confidence to report health, financial, environmental losses arising from negative construction externalities to the appropriate authorities.

Negative construction externalities from the activities, working methods, disposal techniques of construction firms have consistently imposed considerable social, economic and environmental risks on the citizens, ecosystem, materials and the government. For instance, asphalt or bituminous plants, other construction plant or technologies, road stabilization techniques, methods of dumping demolition wastes, have led to innumerable health, emotional, psychological, economic risks and social vices like damage to human health, building fabric, and the ecosystem, squabble for basic civic amenities, accidents, increased crime rate to mention but a few which are not accounted for by contractors or construction entrepreneurs propagating such damages and as such has either not been internalized through penalties or the appropriate financial instruments such as taxation by the Federal Inland Revenue Service (FIRS) or reflected in the taxes already paid by these construction firms.

The F.I.R.S and/or other similar authorities have no appropriate statistical data which could serve as a basis upon which charges could be calculated, thus no appropriate quantification or cost allocation of these negative externalities or valuation of the impacts in monetary terms. On the other hand, incentives for construction firms employing clean, healthy and environment friendly methods of working and disposal are either overlooked or inadequately compensated or their costs subsidized by the Government.

3. Purpose of the Study

The aim of this paper is to study the nature of construction externalities and how it has been addressed in the Nigerian construction environment. This is with a view to providing a theoretical understanding of the subject, as a basis for further research. The specific objectives include:

- i. To identify, via related literature, the various positive and negative construction externalities in existence, their makeup and effects.
- ii. To ascertain the drivers or factors that promotes negative externalities and the barriers or factors militating against positive externalities.
- iii. To examine, via personal observation and experience, the awareness level of construction stakeholders in Nigeria on the existence of externalities, its effects on the Nigerian built environment and the manner and/or extent which it has been handled by concerned stakeholders.

4. An Overview of the Construction Industry

4.1. Definition and Scope

Various attempts have been made to define construction. For instance, [Kunya et al. \(2008\)](#) succinctly defined construction as the process whereby the designer's plans and specifications are converted into physical structures and facilities. It also involves the organization and coordination of all the resources in order to complete the project on schedule, within the budget and according to specified standards. It has also been defined as that which includes residential, industrial and public buildings, civil engineering construction works and the building materials industry. As a result of its assembly oriented nature, the industry is subdivided into two major groups: Building and Civil engineering.

4.2. Organization

The industry is essentially a large industry of small firms ([Anigbogu, 2011](#)). It embraces a wide range of loosely integrated organization that collectively constructs, alter and repair wide range of different buildings and engineering structures. The industry is a project based one, where firms undertake geographically dispersed projects for a long duration of time.

The demand for construction projects is essentially what economists call a 'derived' demand. It is derived from the need for buildings in which to live (houses), manufacture or store goods) warehouses and industries), study (schools), healthcare (hospitals), operate various services (offices) etc. The Government is also the client for a large number if its projects and can thus directly or indirectly use it to control the economy such as reduction in its capital expenditure, deliberate refusal to continue on-going projects, increasing interest rates and taxation ([Anigbogu, 2011](#)).

4.3. Relevance

"When the construction industry 'sneezes', the whole nation catches the cold". "The construction industry is the barometer with which economic growth is measured". "The construction industry is the regulator of the nation's economy". These are common expressions used to buttress the fact that the role of the construction industry in economic development cannot be overemphasized.

For about three decades, the debate has been on, as to the role of the construction industry in socioeconomic development. A school of thought postulated a causal relationship between construction and economic growth. Accordingly, developed countries have a stronger construction industry (which contributes 5-8% to GDP) than less developed countries (where construction contributes 3-5% to GDP).The implication for development policy is that unless the construction industry grew faster than the economy as a whole, it might constrain national development ([Anigbogu, 2011](#)).

[Kolawole \(2002\)](#) shares a similar view by surmising that the building industry operations is a unique one, as it provides the environment under which other industries operate. The industry is the largest in Nigeria and employs a good proportion of the work force. The construction sector can therefore be said to be strongly related to the state of

health of the economy, since it contributes to national income, employment and economic stabilization. Its potential role as an agent for development, modernization, entrepreneurship is widely recognized.

5. The Nigerian Construction Industry

The Nigerian Construction Industry still plays an important role despite the fact that it is yet to meet the challenges of adequately providing the much desired social amenities such as educational, health care facilities, decent and affordable housing for its teeming populace. About 69% of the nation's fixed capital formation is produced by the construction industry (Federal Office of Statistics, 1998). This implies that the construction industry represents nearly 70% of the capital base of the national economy and is an indication of the significance of the industry within the economy (Faniran, 1999).

According to Olaloku (1987) the industry occupies an important position in the structure of the Nigerian economy. The relatively large investment commitment to construction makes the industry an important source of demand generation and this multiplier effect i.e. the great capacity to generate employment, income and expenditure in other sectors of the economy constitutes a major contribution to the economy

Existing data on the building and construction sector of the Nigerian Economy are grossly inadequate. However, past statistics revealed that the sector contributed to the growth and development of the economy. From a GDP of 3.8% in 1960. The sector's national output rose to 4.22% in 1965, 4.38% in 1970 and 5.70% in 1975 (Anyanwu, 1977). This further highlights the fact that the construction industry continues to be a major stimulant in the country's economic growth. Over the last decade, several changes have occurred in Nigeria, which have helped all sectors of the economy, especially the building & construction sector. With double digit growth rates in the last 3 years, the construction industry has outgrown all other sectors of the Nigerian economy. However, its contribution to the Nigerian GDP and employment of labor are still very low.

Despite its significant position, the industry was rated poor in its performance. According to World Bank statistics the construction industry of developing nations ought to contribute between 3% and 8% to GDP (World Bank 1984), the contribution of construction to Nigeria's GDP has stood steadily at about 2% (FOS, 1998). Further studies by the World Bank (1984) revealed that the contribution of the industry to employment in developing nations averages about 3.2%, but the Nigerian construction industry contributes only 1% (FOS, 1998). The poor performance of the Nigerian construction industry has generally been blamed on the overall state of the economy.

6. Construction Externalities

6.1. Definition and Explanation of the Concept

Externalities are side effects or consequences of an industrial or commercial activity that affects other parties without it being reflected in the cost (Externality, n.d). A couple of important aspects of this definition are worth explaining. First and foremost, an externality does not necessarily arise whenever there is some interaction between people's activities. What makes the interaction an externality is that the interaction is not internalized, i.e. what makes an externality an externality is that the parties to the externality do not take account of their interaction (Externality, n.d). If a construction firm dumps some of its demolition waste on someone else's property, it is not an externality if the firm has negotiated an agreement with the owner of the neighboring property. Affecting someone else, and neglecting this effect, is the externality problem.

Externality (n.d) further explains that externality can occur among people, or among firms, or between people and firms. For instance if one construction firm's training of its workers benefits other firms who might later hire some of those workers, it is an externality between firms. A construction firm's training of workers benefitting some other firms is an example of a positive externality: the more training the first firm undertakes, the higher the profits of the other firms will be. There still is an externality problem when the externality is beneficial: as long as one firm's (or person's) actions affect another firm or person, and these effects are not internalized, then there will be an externality problem, and the overall allocation of resources in the economy will be inefficient.

Externalities could also be reciprocal: the wastes disposed from firm 1's production might lower the profits of firm 2. Reciprocal externalities do not cancel : there will be an externality problem here if these effects are not internalized, even if the damage done by firm 1 to firm 2 is exactly the same magnitude as the damage done by firm 2 to firm 1.

A classic example of an externality is pollution. This of course is a negative externality. The effects of the polluting firm's production are a reduction in the utility of people subject to the pollution. If a firm producing a negative externality is not charged for the harm its activities impose on others, then it will undertake those activities at a higher level than is efficient. On the other hand, if a firm producing the positive externality is not paid for the benefits its activities impose on others, then it will undertake those activities at a lower level than is efficient.

There are two main theoretical points about externalities: One, there is an efficiency problem, that the competitive equilibrium is not optimal, whether the externality is positive or negative, if it is not internalized properly. Two, the problem stems from the fact that the agent producing the externality does not face prices that reflect all the consequences of its actions.

6.2. Salient Terms and Composition

In strict economic parlance, externalities are non-market exchange in which one or more parties to the exchange are not compensated and may have little choice in the exchange. Externality is a broader term which includes residuals, intangibles, and incommensurables (QEE, n.d) which includes the following:

- (i) **Residuals:** Waste products (i.e. pollution) created during the operation processes necessary to deliver goods and service to the consumer or beneficiaries. Example, carbon monoxide pollution created by running construction plant and machinery.

- (ii) **Intangibles:** A good, service, or effect of an action that cannot be assigned monetary values; cultural or personal values, emotional, psychological, aesthetic effects, which cannot be measured in monetary terms. Compensation for destruction of a religious facility or spiritually significant place. An extreme example is loss of human life which is impossible to assign a monetary value.
- (iii) **Incommensurable:** These are effects of a given action or activity that can, with some effort, be assigned monetary value. Example is the Cost of monitoring sulfur dioxide, carbon monoxide pollution created by running construction plants and manufacturing raw materials.

6.3. Positive Externalities

Walter (1983) clearly provides a common example of road way construction, which is an instance of a positive externality. He argues that any entrepreneur or contractor who constructs a road will have to bear all the costs (of labour, materials, plant, etc.), just as in any business, but since highways are an external economy, he will be unable to reap rewards proportional to the benefits provided. For example, benefits would spill over to those who own land near the highways, in the form of increased value (i.e., the road builder cannot charge the beneficiaries for these gains). Other benefits would be enjoyed, for free by people who simply prefer more and more highways. Nor could the road owner exclude from increased benefits those who gain from the resulting cheaper transport in the form of lower prices for shipped merchandise.

This argument by Walter (1983) is sometimes put forth in terms of social and private returns. Private returns—the difference between the outlay and revenue which accrue entirely to the individual entrepreneur—are said to be lower than social returns—the difference between the costs and the benefits for society as a whole. In both cases, the contractor must pay the full costs (labour, materials, risks and overheads) of the highway construction, but it is possible only for society as a whole to derive the full benefits. The contractor, being limited to the tolls he can collect, is unable to capture the gains in terms of increased land values, etc., which spill over onto the remainder of the population. Given this alleged tendency of the market to under invest in highways, the argument from externalities concludes that it is the government's obligation to correct matters by subsidizing road building, or, more likely, by building roads itself.

6.4. Negative Externalities

According to Namish (n.d) a major externality associated with road construction is the pollution that is caused by the use of automobiles. As more roads are built, more cars use them, as more cars use them; more pollution occurs and impacts people who do not use the roads. A similar impact is excessive noise. If for example a large road is built near one's house, one will bear the cost of having to deal with all the extra noise even if one does not use the road. Air and noise pollution are the two major negative externalities associated with building of roads.

The cause of the increase in air pollution is the fact that a large number of trees may have to be cut when new roads are being laid. The new roads may also have to be built through wooded areas which results in getting wild life disturbed, locals losing ancestral lands and many more. The construction of roads requires raw materials like tar, cement, concrete etc, the production and usage which cause high negative externality of pollution.

7. Conclusion and Recommendations

From the foregoing elaboration of the nature, effects and composition of construction externalities, there is the need for the general public to acquaint themselves with proper understanding of the nature of construction externalities to help them develop confidence in reporting to the appropriate or concerned environmental authorities when such externalities arise. Construction or built environment stakeholders should also be knowledgeable in the subject to enable them apply it in their working and disposal methods. Lastly, the government, especially the environmental and tax authorities need to take cognizance or be well versed in externality issues to equip them with the necessary expertise in monetizing/taxing realistically and/or quantifying externalities, achieving a balanced and efficient allocation of economic resources and ultimately, better economic planning.

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