

Physical Infrastructure Development: A Critique on Budgeting Techniques

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ABSTRACT

Budgeting techniques can have considerable impact on successful infrastructure delivery. This research using the traditional incremental line-item approach, as well as empirical models derived therefrom appraises budgetary allocations to public secondary schools; this is with a view towards evaluating the significance of the allocations as well as the efficacy of the adopted technique. The research also draws a critique on various other budgeting techniques. Research findings revealed that the budgetary allocations within the time series were inadequate. The research concludes that the traditional line item budgeting technique would appear to explain the established non significance of the models as well as the inadequate capital funding. The research recommends further exploratory studies on the usage/adoption of other budgeting techniques as well as innovative reforms in budgetary allocations for infrastructure development.

Keywords: (i) Physical Infrastructure Development, (ii) Secondary Schools, (iii) Budgets and Budgetary Allocation, (iv) Traditional Line-Item Technique, (v) Other Budgeting Philosophies.

INTRODUCTION

Efficient budgeting systems and allocations form the fulcrum upon which the financing, survival and sustenance of public and private organizations are based. Public secondary schools system is not an exception (Mac-Barango and Mbamali 2015). The research from the foregoing derives its premise from theoretical background that effective and adequate budgetary allocations form the basis for physical infrastructure.

Several literary postulations and assertions as well as empirical studies have evaluated issues on budgets and budgetary procedures and how they influence capital funding for infrastructure. Buhari's (1993) assertion reveals that the budget is as an economic tool, used for the fulfillment as well as the satisfaction of allocation of functions among the competitive needs of government. Other functions of budgets are that they attempt to stabilize the economy, control of inflation and unemployment. Budgeting according to Wahab (2000) is a predetermination of proposed expenditure and incomes which translate into targets that have to be achieved over a period of (weeks, months, years, etc). Budgeting, in the words of Mogbo (2000), involves formulation of estimates of revenue and expenditure. Budgets should provide yardstick for comparisons.

Budgeting for secondary schools physical infrastructure is beginning to be better understood in terms of the various budgeting philosophies when undertaking budgetary allocation exercises. The focus therefore is the establishment as well as the revelation of the efficacy as well as limitations of the traditional budgeting and other management oriented budgetary techniques and

their subsequent impacts during the planning and the management of allocations of funds for physical infrastructure development.

Buhari (1993), Omopariola (2003) and Salawu (2005), have observed the issues of transparency, accountability and probity as essential gains of management oriented budgeting techniques – (planning and programming, planning and performance, Zero-based budgeting).

The fundamental and underlying principles of the management oriented budgeting techniques is the linkage of the planning aspect of budgeting with the implementation phase. Management oriented techniques also have periodic control, accountability and auditing phases. The above advantages and boisterous gains of the management oriented budgeting techniques notwithstanding, the Nigerian nation has suffered reported cases of unnecessary prolonged public works projects undertaken by all tiers of government, federal, state and local government authorities. Mogbo (2000), reporting on the above situation attributed the occurrence to the non existence of realistic budgets as well as cost receipts for budgeted projects. This featured predominantly during the 1980s when the oil in Nigeria started to show remarkable fall; then and till now the public finance of Nigeria also appeared to be unsteady. According to Anyadike and Moneke (2000), the prolonged public works failures is attributed to the situations of preparing public works estimates, which ignored anticipated cash flow requirements and contract conditions, as well as non the involvement of relevant professionals in the in its preparation and implementation resulting in lack of budgetary monitoring of capital projects and thus extra budgetary expenditure as well as disruption of implementation. Folschar (2003), also posited that the traditional line - Item budgeting technique is not very efficient, inadequate provisions of a preceding year are carried forward without the necessary adjustments that are based on realistic parameters and projects. Based on the above assertions it would seem reasonable to infer that the observed limitations of the line-item budgeting technique, are major factors that account for inadequacy in budgetary allocations for infrastructure development. This occurrence further justifies the adoption of reforms/innovations in budgeting techniques, adopted for budgetary allocations.

The place and role of secondary schools in any nations developmental strides further justifies the study. Secondary Schools are at the second tier level in the stratified formal educational settings which have an included socio-economic benefits and opportunities. These opportunities amongst others include a link between primary and tertiary education as well as Labour marketing (Cuadara 2005) and (EFA 2011). According to Cornell (2011), Secondary School System, provides the right education. In the words of Mereno (2005), the benefits of Secondary Schools include the Provision of the right education, a bridge between primary, tertiary and labour market. The World Bank (2009), was involved in the Capital financing of Secondary Schools in 67 Countries totaling US \$5.0 billion. This involvement further validates the place of Schools in economic developments of Countries.

The outcome of this research will address issues on budgeting philosophies and their influences on capital budgetary allocations for the educational Subsector as well as Secondary Schools. A study of the research time series (2000 2007) could serve as relevant basis for others beyond that of this research.

Most of the researches dealing with budgets and budgetary processes are based on organizations in the commercial/industrial sector, even those on public sector, have predominantly focused on the analysis between capital and recurrent budgets. There is relatively paucity of studies on the various budgeting techniques; especially on the efficacy of management oriented technique over traditional one. This is therefore a need (and processes that governs budgeting techniques; this is to extract the principles provide illumination for management in the educational sector and the economic at large. This research is one of such efforts, secondary school is a subset and a second tier in the education subsector of the economy. The research begins to contribute to the agenda

through an analysis of capital budgets with a view to revealing the influence of the adopted budgeting philosophy (the line-item budgeting technique). The research also suggested the possible adoption of other budgeting philosophies (planning and programming, zero-based, performance, functional and programme), as forms of reforms/innovations in budgeting process for infrastructure in various sectors of the economy, secondary schools inclusive. This is targeted towards addressing the observed seemingly limitations with the line-item budgeting technique.

The following defines the limits and bounds of the research within which the established relationships hold. The research time series is 2000-2007; this represents a new era of democratic dispensation with expected changes in processes and procedures that govern allocations for infrastructural for development. The observed limitations associated with budgeting technique used for funds allocations for infrastructural development is however yet to be changed. There is therefore an urgent need for the research to begin to explore the influence of budgetary philosophies and allocations on capital funds for Secondary schools' infrastructure. Allocations made to the education sector through interventionist bodies, such as Education Trust Fund (ETF) and foreign grants from donor agencies were not considered to have impacted on research because they are occasional and selective; the allocations are not mandatory. The Study location is Rivers State of Nigeria lies between Latitudes 4.824167 and Longitudes 7.033611. The predictability function of the established relationships from the tested parameter as models are limited, the raw data used for the analysis were obtained from the line-item budgeting technique; this would appear the causative factor that explains the limitation of the predictive functions of the models.

The research draws from previous studies on budgetary allocations and procedures for secondary schools and other tiers of the education subsectors and infrastructure. Mogbo's (2000) empirical analysis on Federal budgets as well as that of Niger State of Nigeria indicated that during the Military era governments were under extensive pressure; capital budgets as well as the total budgets appeared to be inadequate. Mogbo's (2000) research, in pursuant of further probe of the outcome of the impact of budgeting techniques on capital budgetary allocations for infrastructure to various subsectors of education, indicated as follows (1) That the Federal government budgets were not significantly related to Federal health budget, recording an R-square value of 39.2%. The results of another research undertaken on Niger State of Nigeria, also established that primary schools budget had no significant relationship with the total state's capital budget, recording an R-square value of 19%.

The structure of the paper is as follows: First it provides a conceptual premise of research which borders on budgets and budgeting techniques as the tool and the procedure through which capital allocations for infrastructure development are made. It further elucidates that the efficacy in infrastructure delivery is hinged on efficient budgetary systems and allocations and that the traditional line-item budgeting technique seem to have limitations. Second it draws a critique on the various management oriented budgeting techniques, these form the basis for the review of related literature. Third, it summarizes the research methodology adopted leading to the analysis of data. Next, it presents the research findings, followed with discussions. Finally, conclusions were made drawing from the research findings of the analyzed parameters and offers recommendations.

REVIEW OF RELATED LITERATURE: A Critique On Budgeting Philosophies:

Effective and efficient budgetary planning for capital project establishes the benchmark for implementation and monitoring through the project cycle and construction contract auditing provides the in-built mechanism for checks and balance in the procurement process and these are

fundamental tools for optimizing project performance (Anyadike and Moneke 2000).

The efficacy of the established benchmark for budgets and budgetary allocations for infrastructure development would often time seem deficient and inadequate for the implementation of capital projects. Several factors have been found attributable to the above occurrence, which range from the usage of the traditional line-item budgeting approach as well as the non adoption of management oriented techniques. See for example the assertion of Opawole et-al (2011), stressing that when budgets become mere allocation of available funds in proportion to non-prioritized number of projects, without thorough analysis of the constituents' projects and their resource requirements, the consequences are phenomenal failures leading to project abandonment. In a related perspective Mogbo (2001), sees budgetary allocation procedure for infrastructure in Nigeria to have non procedural approach. This procedure has been criticized as the reason for lack of connectivity between budget sizes and projects they are intended to finance. In most cases, projects covered by a fiscal year budgetary allocation are not completed or abandoned. This phenomenon though becoming worrisome, could be traceable to deficiency in the previous trend of public budgetary allocations to cope with the desirable level of infrastructure constructions.

Strands of literary/empirical evidences have shown that budgetary allocations have adopted the traditional incremental line-item approach. The budgeting exercise did not give rise to effective allocations. The Omopariola (2003), further buttresses the above assertion, observing that the traditional budgeting technique does not inter-relate financial outlays with physical targets. It provides no indicator for the relationship between estimated inputs and the expected outputs as an integral part of the budget. This budgeting technique has proved quite clearly, that it is deficient as a tool of management and an instrument for evaluation of performance. Salawu (2005), also corroborated, revealing that the line-item budgeting technique is usually incremental in nature. Previous years allocations to certain programs are merely reviewed upward or downward depending on the future of national pursue.

Management Oriented Budgeting Techniques:

Management oriented budgeting techniques have the propensity to mitigate the limitations as well deficiencies associated with the traditional line-item budgeting technique. The boisterous gains of the management oriented techniques are manifest interms of their comparative advantages they have over the traditional one. These manifestations are show cased interms of time duration, cost effectiveness of derived budgets. Salawu's (2005) headings provide the relevant advantages of the planning programming budget system as follows. The systematic analysis of various cost and benefits (planning cost and benefits planning), decisions on specific course of action to follow in carrying out planning decisions (i.e. Programming) and translation of planning and programming into financial plans (i.e. budgeting).

Buhari (1993), has also identified issues of transparency, accountability and probity as essential gains of management oriented budgeting techniques – (planning and programming, planning and performance, zero-based budgeting).

The fundamental and underlying principles of management oriented budgeting technique is the linkage of the planning aspect of budgeting with the implementation phase. In addition, management oriented techniques have periodic control, accountability and auditing phases. These principles are inherently absent when undertaking budgeting exercises, adopting the traditional technique. The above assertion, offers one of the fundamental comparative advantages of management oriented budgeting technique over that of traditional incremental

line-item one.

According to Omopariola (2003), zero based budgeting philosophy does not link the implementation (management) phase of a budget year with planning and formulation stage of a succeeding year budget. The efficacy of the zero-based technique therefore lies in the assumption that budgeting starts with planning and formulation stage of each succeeding budget year, without reference to the previous year's budget.

RESEARCH METHODOLOGY:

The research is fundamentally predicated on reviews of literature as well as field work which articulated existing Knowledge on the influence of budgeting philosophies on allocations for capital funding to secondary schools physical infrastructure development. The methodology adopted is considered suitable for the research in view of the nature of data that is collected, collated and the computational technique that is employed. Mac-Barango's (2015), research on the impact of distance on the demographic variable of the price of timber provided an appropriate basis for the choice of the research method. This research has the following as its parameters of interest: The impact of chosen budgeting technique on various budgetary parameters of Rivers State of Nigeria within the time series of the study.

The Source of data collected for the various Parameters were from the Rivers State of Nigeria ministry of economic planning (department of budget). Oral interviews complemented articulated reviews, in some instances to buttress and highlight variables that influence budgetary allocations for physical infrastructure in schools. Relevant websites were also searched to obtain relevant literature reviews as well statistical techniques concerning the research focus. The statistical tool of regression, both (Simple and Multiple) was employed for purpose of analysis, of the relationships between and amongst the 16 budgetary Parameters. These parameters include the (total, capital and recurrent budgets) to the educational as well as secondary schools. (see the publication of Mac-Barango & Mbamali (2015): Analysis of Budgets for physical infrastructure for the details. (www.waber conference). The statistical technique of regression as well as various values of the derived statistic; Fcal, Ftab, P-values, R-square established the strength as well as the significance levels of the various models established between the parameters at 5 percent level of significance. In attempts to find better fits for the tested parameters of the derived equations, transpositions of the variables within the models to their exponential formats (square and cube roots) were also undertaken. Descriptive analysis, in the form of charts and figures were also employed to illustrate and explain the outcomes between variables and features of the dependent and independent variables over the research time series. (see the publication of Mac-Barango & Mbamali (2015).

PRESENTATION OF RESULTS OF RESEARCH PARAMETERS

Tables 4.3 and 4.4 Present the results of analysis of research parameters. The data for the budgetary parameters as well as status of the models derived their basis from the traditional incremental line-item budgeting technique. (see the publication of Mac-Barango & Mbamali (2015), pages (96 to 98) for the derived models.

DISCUSSIONS OF RESULTS OF THE TESTED PARAMETERS

The results of the inferential analysis as presented in tables 4.3 and 4.4 established as follows: (i) The Simple Correlation analysis between the budgetary parameters, established that there were no significant relationships between the tested parameters, the relationships were weak. (ii) The R-square values, the P-values were between 9-25 percent and (0.233-0.843) respectively (iii) The results of the Multiple Regression analysis as presented in table 4.4 did not establish any

significant departure from the results of the simple regression analysis. (iv) The relationships established from both the simple and multiple correlation analysis, indicated weak and negative linearity between the parameters. The following constitute the **implications** of the outcome of the relationships between the tested budgetary parameters: In case of the simple linear regression equations, the independent variables cannot be predicted from the dependent variables. The relationships between the parameters using multiple regression analysis did not establish any significance. The transpositions of the parameters to their exponential formats did not give rise to relationships that established significant departure from the earlier linear ones. The budgetary allocation trends, indicated arbitrariness over the time series. The results of the analysis would appear to be explainable by the fact that the values of the raw data of the budgetary allocations were obtained from the traditional incremental line-budgeting technique. This would appear to account for the observed limitations of the predictability functions of the established relationships between the parameters. This has led to shortfalls in capital budgets for physical infrastructure.

The results of this research, is also in agreement with that of Idiake's (2003), which established inadequacy in capital funding for secondary schools in Oyo State of Nigeria. In Idiake's (2003) research, the traditional line item budgeting technique also formed the basis for the raw values of the budgetary allocations used for analysis: The outcome of his research was also suggestive of the adoption of reforms/innovations in budgeting for physical infrastructure, he posited that the allocation of funds to secondary education does not appear to have been carried out with due consideration to student enrolment, number of schools and number of available classrooms in the state for the period under review. This has probably resulted to its inadequacy of building infrastructure prevalent in the state post primary schools. The study therefore suggests that the variables, number of schools, available classrooms and students enrolment tested should be considered when allocations funds to public secondary in the state. The average funds allocated to the education sector in the state is about 6% of the total budget for the period under review, which was far from the target of 26% set by UNESCO, therefore more funds should be allocated to physical infrastructure. This is in view of the increasing enrolment resulting from free education policy of the Oyo State government of Nigeria. Omopariola (2003), Folschar's (2003) and Salawu's (2005) assertions, are also in agreement that strands of literary postulations have shown that budgetary procedures and allocations which adopted the traditional line-item technique, revealed inefficiency; inadequate provisions of a preceding year are carried forward without the necessary adjustments that are based on realistic parameters and projections. Transparency, accountability and probity are essential elements that need consideration during the budgeting exercises and procedures.

Anyadike (2002), has posited that we do not have a culture where resources are allocated based on objectively determined or planned requirement. We talk of allocation of money rather than set tasks from which resources requirements are determined. When budgets become mere allocation of available funds in proportion to non-prioritized number of desired projects without thorough analysis of the constituent projects and their resource requirements, the consequences are phenomenal failures, which lead to project abandonment. Projects undertaken without planned and continuous funding to completion should not be embarked upon. A review of the Nigerian budget policy; revenue allocation policy, visions in perspective planning and control of recurrent expenditure and subventions, is desirable if we must achieve efficiency and comparative advantage in economic production of goods and services.

Based on the above assertion, it would appear reasonable that budgeting and budgets as economic tools need some forms of reforms, in order to achieve aims and objectives, for which

capital funds are disbursed. Management oriented budgeting philosophies would appear to offer good opportunity and sound basis towards addressing the observed limitations and inadequacies associated with traditional incremental line-item technique. Management oriented techniques have the following attributes. Periodic controls, accountability as well as auditing phases. These techniques can be adopted for much longer durations and not limited to annual segments as is generally the case with the traditional incremental line-item budgeting technique. It has the capability of linkage between the planning aspects of budgeting with the implementation phase.

SUMMARY OF FINDINGS

Budgeting for physical infrastructure is beginning to be better understood in terms of the budgeting philosophies adopted for budgetary allocations for physical infrastructure development. Budgets and budgetary allocation form the fulcrum for infrastructure development. Budgets as economic tools play vital roles in development of nations. In this research the traditional incremental line item budgeting technique formed the basis of capital funding for physical infrastructure. Several literary postulations as well as empirical analysis undertaken on the adopted budgeting technique, seem to explain that the traditional incremental line item; is responsible for the observed limitations in capital funding for the education sector and subsequently secondary schools.

Some of these postulations though not tested within the confines of this research have supported the adoption and desirability of reforms in budgetary regimes for secondary infrastructure development. Some of these budgeting philosophies which seek to address the perceived problems and limitations of traditional line-item technique include program budgeting, zero based budgeting, planning & programming budgeting system.

CONCLUSIONS AND RECOMMENDATION

The research concludes that effective and adequate budgetary allocations form the basis for physical infrastructure development, budgeting for secondary schools, physical infrastructure is not an exception. Budgeting exercise undertaken in this research did not give rise to effective allocations; this occurrence would seem explainable by the budgeting technique adopted; the traditional incremental line-item. The predictability functions of the established relationships from the tested parameters as models are limited. Arising from the conclusions, the research advocates for further exploratory studies on other budgeting philosophies and reforms that could possibly form the basis for budgetary allocations for physical infrastructure development.

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