CSCanada
Management Science and Engineering
Vol. 5, No. 4, 2011, pp. 7-15
DOI:10.3968/j.mse.1913035X20110504.160

ISSN 1913-0341[Print]
ISSN 1913-035X[Online]
www.cscanada.net
www.cscanada.org

Achieving Sustainable Infrastructural Development in Developing Nations: Project Management Education to the Rescue

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Received 10 September 2011; accepted 25 October 2011

Abstract

The need for adequate supply of infrastructure has long been viewed as a key ingredient for economic growth and sustainable development, both in the academic literature and policy debates. With the quest for economic development by governments in developing countries and the consequent emergence of public-private partnerships to deliver major infrastructural projects on time, within the approved budget and in accordance with the preset specifications. A linkage can be established between Sustainable infrastructural development and Project management. This will be seen from the need to maximize success in infrastructural projects that will deliver integrated social, economic, and environmental concerns. In this setting, there would be need for the recruiting of multi-disciplinary teams with specialist backgrounds to implement these infrastructural projects. The question to ask is if project management as a profession is adequate in the delivery of a steady stream of experts to carry out needed project management activities in infrastructural development? We present evidence that project management is being increasingly seen not as a profession with a clear educational path, but as a skill that can be acquired with experience and as a second degree specialization. We also present evidence that shows that project management is not highly competitive in tertiary institutions in our Nigerian case-study and this may be as a result of a lack of clear understanding of the profession of project management. We argue that there is an urgent need for harnessing the development potential of project management as a structured profession with a clear educational path; such that project managers can begin to take on the task of delivering sustainable infrastructural projects. They are to ensure that in the execution of these projects; the economic role of these infrastructural projects should not be accorded 'precedence' over the other dimensions of sustainable development – the social, cultural and environmental aspects.

Key words: Sustainable development; Infrastructural projects; Project management; Education; Nigeria; Economic growth

Babatunde O. Odedairo, Muritala O. Oke, Basirat A. Oyalowo (2011). Achieving Sustainable Infrastructural Development in Developing Nations: Project Management Education to the Rescue. *Management Science and Engineering, 5*(4), 7-15. Available from: URL: http://www.cscanada.net/index.php/mse/article/view/j.mse.1913035X20110504.160
DOI: http://dx.doi.org/10.3968/j.mse.1913035X20110504.160

INTRODUCTION

Sustainable development has evolved as a paradigm to balance the developmental needs of man and to ensure that economic development is achieved without compromise to the environment and with due respect to delicate social balance. With the signing of a few global

pacts worldwide, such as Agenda 21, there is a growing recognition that the quest for sustainable development is an inevitable responsibility for all countries wishing to maximize the wealth of its present and future population. This responsibility is no less important for developing countries, given a number of factors, such as: rapid urbanization, decaying infrastructures, heavy regulation, little growth in productivity with chronic budget deficits, a preoccupation with meeting the needs of the present by all means, with resulting environmental degradation and exploitation. Therefore, to ensure rapid growth, a number of measures have been advocated. A major development theory advocates for neo-liberalism, which is epitomized by government pulling out from direct provision in favour of emerging as a facilitator or enabler of private sector driven participation, as the panacea to underdevelopment in Africa, Asia, Latin America and the Caribbean. Developing countries, in turn, are widely accepting this call and in many nations, some form of deregulatory agenda is being established. The most important outcome of this deregulatory agenda is the emergence of Public Private Partnerships (PPP) as the preferred delivery mechanism for major infrastructural projects.

Infrastructure can be described generally as large social overhead capital; such as roads, ports, hospitals, bridges, sewer facilities, airports, electricity generation and distribution, and communication networks. These infrastructures provide the basic framework for a nation to support essential public services in order to achieve higher economic growth and better quality of life. Therefore, the ability of a nation to provide and effectively maintain the availability of these infrastructures is a direct indicator of the attitude of the nation towards development. This is primarily a differentiating factor between the various levels of development worldwide. Based on this premise, the developed world is able to transform not only their domestic economic growth but also increase their competitiveness in the world market due to robust economic development policies (Djiofack-Zebaze & Keck, 2009). The provision of these infrastructures has often been perceived to be the direct responsibility of government alone due to the large social overhead costs and in part to the high degree of social and economic externalities that they generate. The essential concept of infrastructure is a simple one – infrastructure is a set of assets needed to supply certain desired services. For example, it is the capital stock needed to generate electrical services, or the land transport assets needed to supply (land) mobility and access services. Usually, the operation of infrastructure assets often involves externalities (effects on other parties) which require regulation. Regulation is necessary to mitigate against natural monopoly characteristics (market power). Therefore, regulatory bodies are usually established by statute law, hence the name “statutory regulation”. Moreover, some governments preclude private sector initiatives in this areas, largely because it is felt, that private provision of basic infrastructure could be usury and discriminatory. In particular, it is often argued that most beneficiaries of these infrastructure are poor and cannot afford to pay economic rents, despite the fact that income transfer to them through these projects are desirable and essential. This is beyond the scope of this article. Successful delivery of infrastructural projects is hinged on the quality of human resources that will be assembled, and in as much as project management is the profession saddled with the specialized tools, techniques and skills needed to deliver project objectives successfully, it is important that there exists, within these countries a steady and reliable stream of project management manpower, who by training and education, delivers the essential project outcomes important to stakeholders.

The purpose of this paper is to show that there is a need to create a strong, structured educational path for the project management profession in Nigeria such that the nation can achieve sustainable infrastructural development. This is necessary because there is currently a gap in the educational system for the training of project management professionals in Nigeria. The linear career path which is in operation in several other professions (-such as accounting, engineering, law and medicine) is not currently enjoyed by project management professionals. Neither is there a clearly delineated expert career path which will allow undergraduate specialization followed by incremental learning and refinement to produce expertise. We therefore ask the following questions:

1. What is the state of project management education in Nigeria?
2. What are the qualifications needed to practice project management in Nigeria?
3. Can project management as a discipline ensure successful completion of sustainable infrastructural projects in Nigeria?

We adopt a three-pronged methodology: first, we establish through a content analysis of major documents to ascertain the current state of studies: How many tertiary institutions are offering project management at the undergraduate level? What is the career path after graduation? What are the competence and skill levels promoted in the schools?

Secondly, we establish through a survey of employment agencies, the entry qualifications for the post of project managers in the industry. This is to establish the terminal point for an educational qualification in project management.

Thirdly, through documentary analysis, we show the clear potential of project management as a catalyst for promoting development through the successful delivery of infrastructural projects with potential sustainable development outcomes.

Taken together, we present evidence that shows

that project management is not highly competitive in tertiary institutions, and this may be as a result of not having a clear understanding of the business of project management. We also present evidence that project management is seen not as a profession with a clear educational path, but as a skill that can be acquired with experience and as a second-degree specialization. We therefore present a framework with which project management education can be used as a catalyst for sustainable infrastructural project development, highlighting potential challenges and opportunities.

This paper proceeds as follows: After this introduction, we examine in some details the three paradigms of interest here: sustainable development, infrastructure and project management. We also examine public-private partnerships as the preferred means of project delivery in developing countries. In this section, we carry out a detailed review of the literature in these fields. We utilize the third section to present and discuss the field research. Section four concludes by proposing the clear educational path that would ensure that project management is maximized as a catalyst for achieving sustainable infrastructural development.

CONCEPTUALIZING THE PARADIGMS

Sustainable Development

This work is located within the conceptual framework of Sustainable Development. The paradigm Sustainable development has its origins in the environmental movement but has acquired significance across all facets of human life from social, to economic and political aspects. Indeed, the last few years have witnessed its acceptance as a challenge to global development expected to be met by national governments. This is exemplified mainly by its adoption at the United Nations (UN) Conference on Environment and Development (Rio de Janeiro) in May 1992. Despite this, its definition, measurement and application have been subject to various debates. On the one hand, there are claims that the definition of the term is difficult because it is an oxymoron and therefore unattainable in real terms (Osorio, Lobato & Castillo, 2005: 503). These authors also document the work of Naredo (1997) who argued that 'sustainability' and 'development' are an antithesis and therefore cannot be measured as an integrated whole; and also Escobar (1995) who argued that sustainable development is at best the reconciliation of two enemies with urgent need for the development of instruments that would allow for an integrated world view of the subject. There are also opinions that because of its environmental origin, most programs directed at its implementation have prioritized environmental issues over social economic matters (Bond et al, 1998). Currently, however, there is an admission that there have been changes in the perception, scope and definition of sustainable development from mainly environmental concerns of the future to cover more holistic and integrated human development (Dooris, 1999). There is the admission that the call for sustainable development therefore arises from the desire to ensure that economic development is intrinsically balanced by environmental protection and social justice. This way, economic development is continuously adjusted to provide for inter-generational maximization of welfare (see also Hales, 2000 for further analysis) according to each given sector and geographic area.

We are particularly drawn to this conceptualization because developing countries are known to place economic development as a higher priority in their own drive towards attaining sustainable development. Various studies; such as Maconachie & Binns (2006) examined the place of sustainable development in peri-Kano (Nigeria); Roberts and Diederichs (2002) examined the transferability of sustainable development practices in South Africa; Vordzorgbe (2006) examined the adoption of a National Sustainable Development Strategy in Ghana; and Drakakis-Smith (1995: 667) who assert that third-world governments have continued to see contemporary environmental concerns of sustainable development as secondary to other concerns such as economic growth and politics. With basic infrastructures and services in acute short supply, stunted economic growth and burgeoning demography, the need for the provisioned basic infrastructures and improved services has become a primary concern for both city and national governments. This is why even though we cannot ignore the three tripods of sustainable development (economic development, environmental protection and social justice) , but we argue that economic development as the platform that is most critical for projecting sustainable development outcomes for most developing countries.

Infrastructure

This article is concerned with physical infrastructure, rather than 'social' infrastructure (e.g. the education and health systems) or institutional infrastructure (e.g. the land use planning system). Infrastructure is a key element for realizing sustained economic growth and sustainable development to achieve the United Nations Development Programme- Millennium Development Goals (UNDP-MDGs), and in particular, MDG 1 (Poverty Reduction) and MDG 7 (Environmental Sustainability) (see appendix). Therefore, the unmet demand for physical infrastructure to support the delivery of housing, transportation, energy and water requirements limits economic opportunity and is therefore a major barrier to the realization of MDG 1 (UNDP, 2003). Historically, public ownership of enterprises gave the state the power to impose a planned structure on the economy and can be traced back as far as the seventeenth century. This resulted in government embarking on various infrastructural developments to

support services such as postal, telecommunication, power, transportation, waterworks, sewerage and many more.

The provision of these infrastructures is required by a nation aspiring to achieve a better public infrastructural service. However, Familomi (2004) argued that the provision of these infrastructures by the government could pose a large social overhead capital. While, Adeola (2002) affirmed that public enterprises are usually perceived as drain pipes for government budget, thus creating budgetary strains and unwarranted burden on the economy. Afeikhena (2002) identified issues such as defective capital structure, excessive bureaucratic control, inappropriate technology, gross incompetence, mismanagement, blatant corruption and crippling complacency as problems facing many public owned enterprises. In many developing countries, the mis-management evident in many publicly owned enterprises led to huge wastage of resources and manpower giving the government no other option but to pursue reform programme (Anya, 2002). These reform programmes embarked upon by many countries brought about the emergence of the various national regulatory bodies saddled with the responsibility of promoting market liberalization through public and private partnerships.

Early privatization measures were, on the whole, concentrated in the manufacturing sector but, in recent years, the private sector has become increasingly involved in the financing and delivery of infrastructure. In many developing countries, private sector participation in infrastructural development had received over US $ 755 billion in private investment flows in nearly 2, 400 infrastructure project by the end of 2001 (World Bank, 2005). Analyst even believed that a significant part of the increase in Foreign Direct Investment (FDI) in the service sector has been the growth in private capital flows for infrastructure in response to the general trend towards privatization of infrastructure in developing countries.

Project Management: Linking the Profession and its Education

The International Standard Organisation (ISO-8402) define project as "a unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements including constraints of time, cost and resources". The Project Management Institute (PMI) in their Project Management Body of Knowledge (PMBOK, 2008) define project as "a temporary endeavor undertaken to create a unique product, service, or result". Though, no single definition of a project will meet or suit all cases; all projects share several attributes, namely: objective, uniqueness, complexity, temporary nature and uncertainty. The essence of project management is to create change (Reiss, 1995:14). Many scholars and writers have defined project management from different perspectives. Rosenau (1998: 4) said project management, in large part, is the management of interpersonal conflict, which is inherent in complex organisational situations. Successful project management means meeting the performance specification (that is, objective or technical goals), on schedule, and within the budget (Rosenau,1998: 11). In the business and industrial fields, project management involve managing and directing time, material, personnel, and costs to complete a particular project in an orderly, economical manner, and to meet established objectives in time, dollars, and technical results (Spinner, 1992: 2).

Peltoniemi & Haapasalo (2003) studied the project management education of some international universities. They identified a gap in the educational offering; the availability of project execution training is limited. However, the experience of the project manager is one of the critical success factors of project management. However, Hodgson (2005: 65) draws a distinction between the traditional view of the profession as a purely productive organization of experts possessing skills and knowledge vital to society and the critical view of the profession as the mobilization of monopoly power to secure power and influence for a privileged minority. Professionalism lays claims to competence and the establishment of a code of behaivour of people to be addressed as professionals within a specific application area. In the literature reviewed, a debate on the legitimacy of the claim of project management to being a profession is uncovered in the work of Hodgson(2005). Hodgson applies the critical view of professionalism to the discipline of project management, and therefore views the discipline as a 'pseudo-profession' mainly because it is an 'insecure, emergent professionalizing' occupation, while also admitting that it has spread across diverse fields of human endeavor such as technology, health, social services and education far from its origins in engineering. In legitimizing the profession, traditional tools such as development into a defined job category, development of specific traits related to the personae of a project manager, promotion of accredited training programs and development of credentials as a precondition to accessing job opportunities have been adopted. In the works of Morris, Crawford, Hodgson, Shepherd & Thomas (2006), they believed that despite this, uneven progress has been made and project management remains an emergent profession. In this work, project management is portrayed as a set of practices without the legitimate right to professionalism, but which relies on the use of subjugation to enforce its doctrine on people who are in the practice of implementing projects. Hodgson's conclusion is based on the action research carried out over a two-year period in two companies in the United Kingdom (UK) financial services sector, one bank and one life assurance institution, with interviews carried out within these organization and observations of project

teams working in the fields of information technology (IT) and new technology.

Hodgson's work presented an opportunity to establish the linkage between education and professionalism and while the conclusions arising from this piece of research will be re-examined shortly, attention must be drawn to the work of Brown, Adams & Amjad (2007). Brown et al. (2007) focus on the relationship between human capital and time performance in project management. They developed 4-four typologies of project management human capacity profiles, each with clearly defined career paths, based on the level of educational attainment and experience gathered by the practitioner.

This typology is summarized below:

1. Type 'A' personae with tacit knowledge arising from experience, general educational background, no formal project Management (PM) qualifications.
2. Type 'B' personae with ample tacit knowledge, general educational background, little industry specific knowledge, and no PM qualifications
3. Type 'C' personae who possesses industry-specific knowledge, experience and qualification but no formal PM qualifications
4. Type 'D' personae with tacit knowledge and experience, general educational qualification and formal PM qualifications.

The research, which was based on a study of construction industries in UK and Saudi Arabia, suggest that knowledge without specific PM education and PM experience will reduce the initial potential for successful performance and conversely that individuals educated and trained specifically in the subject of PM will deliver better performance.

The link between education and professionalism is therefore clear. Professionalism demands deference to the 'strictures and structures' of a discipline, which according to Hodgson(2005) is developed from the creation of a mindset, mastering of the set of skills, acceptance of these skills, reproducing them and embodying rituals of action. Education encompasses all the cumulative processes of mastering (months of training, induction into the professional, daily performance). If anything, Hodgson has established a certain difficulty in the transformation of project staff into project management professionals-that is the transformation of practitioners who have not acquired project management *education* into project management *professionals*, thereby supporting Brown et al.(2007) findings related above. It found that the attempt to carry out this transformation in two UK organizations was not uniformly achieved, and there was a clear case of parody and subversion in the attitudes and actions of the staff. In the author's words: "the typical attitude among staff in the face of powerful inducements to adopt a 'professional' identity was a complex mixture of attraction, fear and a profound ambivalence towards this role, played out through the assumption and tentative transformation of professional identity over time" (Hodgson, 2005: 61).

The panacea to this is to increase project management professional capacity through the establishment of Project management as a structured discipline of learning, so that there exists a pool of potential staff already schooled in the professional ethics, knowledge, and behavior. Therefore, here lies the link between education and professionalism, and here also lies the major shortcoming of Hodgson's work, which has relied on the use of respondents, who are working as project teams but did not begin their careers as project managers with both qualifications and experience in project management. Thus, following the four career paths presented by Brousseau et al.(1996), as cited in Brown et al.(2007: 79), the ideal path toward establishing oneself as a project management professional (PMP), is through the expert route. The expert route allows one to adopt an initial discipline choice (usually as a first degree), after which added knowledge in that same discipline is expected as well as accumulation of experience, which will expectedly- refine and refocus the individual, to become an 'expert'. Project management as a discipline is built upon an abstract and objective body of rules; with specific ontology and rules of practice specific to its practitioners.

Project Delivery Mechanisms in Developing Countries

Project Delivery Mechanisms

Project Management is a highly structured process involving the initiation, planning, execution, monitoring, controlling, and completion of a project. In principle, project management allows the organization and integration of resources to achieve a specific goal within a designated time frame. The essence of the practice of project management is to ensure that an organization is able to make high quality decisions at a lower cost and within a shorter duration. Hence, project management ensures that all the key issues–such as cost estimation, resources management, procurement of resources and supplies, establishment of quality standards, human resources deployment, sustainment and management, stakeholder management, risk assessment, time management, and communications management that could affect the delivery of a project are carefully and continuously considered and integrated into project implementation. Successful project management delivers the agreed outcome on time within approved budget and in accordance with the preset specifications. In the quest for achieving sustainable development, countries worldwide have adopted a project delivery approach wherein government agencies can act as enablers to private sector driven investment projects.

The objective of public private partnership (PPP) is to deliver outcomes that are acceptable to all stakeholders. The Project Management Profession is particularly suited to constitute the principal human capital needed in this

drive. Therefore, the educational path of the future project manager must be prioritized to ensure that legitimacy and expertise are assured. Gavin & Bosso(2008: 163) define PPPs as a "long-term contractual arrangement between the public and private sectors where mutual benefits are sought and where ultimately the private sector provides management and operating services and/or puts private finance at risk". PPPs have become globally acceptable as a means of defraying cost of development from the government to the private-sector investor willing to take the risk for a long-term return. It is recorded that in the late 1990s, a survey of a dozen national governments across the globe revealed that a significant proportion of the respondents believed that by 2010, PPPs would be the dominant project delivery mechanism (see Gavin & Bosso, 2008: 162).

The long-term, high complexity and strategic nature of PPPs, as well as the multiplicity of stakeholders and goals provides a good opportunity for project management to perform a developmental role, by working to deliver the tenets of sustainable development. Given the nature of PPPs to impact on inter-and intra-generational needs, there is little doubt that careful selection of team members is necessary, in order to achieve the desired multiple objectives, while optimizing the input resources and output infrastructure (Kumaraswamy & Anvuur, 2008).

THE STUDY AND FINDINGS

The Current State of Project Management Education in Nigeria

Firstly, we establish through a content analysis of major documents to ascertain the current state project management in Nigeria. Nigeria is organised into 36 states and a federal capital territory (FCT). Until recently, Federal and State Governments were the only providers of tertiary education, with the calls for de-liberalization of the educational sector; there has intense competition by private individuals, corporate bodies and religious bodies to establish private universities. A National University Commission (NUC) was established to provide them with licenses and accreditation of both universities and courses to ensure uniform standards. Today, spread across all its 36 states, Nigeria has about 104 universities, with 41 private universities, 36 state universities and 27 Federal Universities. To establish the attractiveness of project management in these universities, we utilise an analysis of documentary evidence. We sought to establish whether there is a possibility of pursuing an expert career path in project management in Nigeria (as defined by Brousseau et al.,1996 cited in Brown et al. ,2007). We ascertained the number of tertiary institutions offering project management at the undergraduate level. To do this, the Joint Admissions and Matriculation Board (JAMB) admission brochure was consulted. The JAMB is saddled with the responsibility of setting out guidelines for admissions to first degree courses in universities and other degree awarding institutions in Nigeria. This is achieved through an annual Universities Matriculation Examination (U.M.E) conducted to place students into universities in Nigeria. Like all earlier editions, this version, 17th Edition, 2010/2011 U.M.E/DE brochure is structured to provide information about the available courses, departments, and colleges in every Nigerian University. Information about entry requirements and special waivers are also contained here. It revealed at page 297 that Project Management Technology is being offered by two Federal Universities in Nigeria. The Universities are: Federal University of Technology, Owerri (FUTO) in Imo State and Federal University of Technology, Akure (FUTA) in Ondo State. These two universities are located in the eastern and western part of Nigeria respectively. It is located under Engineering/Environmental/Technology. The table below shows the courses/universities/course code, requirements for direct entry and fresh entry into these two universities as well as the U.M.E subjects and special consideration and waiver remarks.

Table 1
Universities Offering Project Management at the Undergraduate Level in Nigeria

Courses/Universities/ Course code	Requirements		U.M.E	Special Consideration
	Direct Entry	U.M.E	SUBJECTS	(WAIVER) REMARKS
Project Management Technology: FUTO 11417D FUTA 11563D	i) Two 'A' level passes in Physics/Maths/ Econs/Geography ii)OND/HND in Estate Management, Quantity Surveying, Building Tech and Engineering (Upper/Lower Credit)	Five O'Level credit passes to include English Language, Maths, Physics plus a pass in Chemistry and either Economics or Biology.	Mathematics, Physics and one of Chemistry, Economics and Biology	DIRECT ENTRY (i) FUTO requires credit passes in Mathematics and one of the Chemistry/ Physics/Economics/ Biology/Geography. Also OND/HND in Estate Management, Quantity Surveying, Building Tech and Engineering (Upper Credit)

With the clear opportunities and market for project management professionals, it is immediately clear from the information derived from this analysis that project management as a professional career path remains unrecognized and largely unpatronised in Nigeria. However, while an expert career path may not be currently achievable, it is also easy to see that the Nigerian market favours the spiral pattern of career path featured by Brousseau et al. (1996) as one followed where an individual makes major transitions between disciplines, normally from an initial discipline to subsequent allied disciplines. Because entry requirements accommodate holders of ordinary national diplomas (OND) and Higher National Diplomas (HND), in professions such as Estate Management, Quantity Surveying, Building Technology and Engineering to cross-over also reinforces this view.

Having established the limited interest in providing Project management education as a linear and expert career path, we turn to another critical issue: the educational background of practicing project managers. We ascertain thorough a Web-based survey of up-market recruiting firms, the qualifications matched to the job position of 'project manager'. The content of job advertisements for 10 recruiting firms was obtained during a course of three months.

Table 2
Entry Qualification for the Post of Project Manager in Nigeria

Name of Agencies	Date of Publication	Job Title	Qualification Required
Briscoe Properties Ltd	14th August, 2009	Project Manager	Degree in Civil Engineering, Architecture, Mechanical, Electrical Engineering; Masters in Project Management
Orion Engineering Services Ltd	26th October, 2009	Project Manager	N/A
Pressure Vessels, Nigeria	27th November, 2009	Project Manager	B Sc Engineering, PMP
Raeburn Group, Limited	25th November, 2009	Project Manager	HND/BSc Engineering Disciplines
Orion Group, Ltd	27th October, 2009	Project Manager	As above
Swift Oil and Gas	27th November, 2009	Project Manager	B Sc Mechanical, Civil or Chemical Engineering, CAPM.
Swift Technical Group	27th November, 2009	Project Manager	B Sc Mechanical, Civil or Chemical Engineering, CAPM.
LBH Consultant, Nigeria	27th November, 2009	Project Manager	B Sc Mechanical, Civil or Chemical Engineering, CAPM.
Tank Terminal, Faststream Recruitment Plc, Ltd	27th November, 2009	Project Manager	B Sc Mechanical, Civil or Chemical Engineering, CAPM.
Quest Project Personnel	27th November, 2009	Project Manager	Engineering degree- Civil, Mechanical, Structural, Hydrodynamics, Naval Architecture

The minimum professional qualification varies from Degrees/HNDs in Civil Engineering, Architecture, Mechanical, Electrical Engineering, to degrees in Hydrodynamics and Naval Architecture while Masters in project management, professional qualification in Project Management Professional® (PMP®) and Certified Associate Project Management® (CAPM®) is included as an added advantage, but not as a precondition to practice project management. This also evidences Brousseau et al. (1996) spiral career path hypothesis as well as Brown et al. (2007) argument that to get to Project Manager positions an individual can obtain 'a formal academic qualification in a 'traditional' built environment discipline that is not specifically PM, notably the surveying disciplines. However, Morris et al. (2006) view about the 'pseudo-profession' of project management demands that project teams need to transit successfully to a professional mode.

Thirdly, through documentary analysis, we show the clear potential of project management as a catalyst for promoting development through the successful delivery of projects with potential sustainable development outcomes. The table below shows examples of live projects being delivered through PPP in two states –Lagos and Ogun in Nigeria. This information is obtained from random selection of Economic Bulletins made generally available to the public as a means of gaining support from Government activities. The table shows that there is a readiness on both the government and the private-sector partners to enter into Joint Venture partnerships for the delivery of these capital projects; most of which can be seen to have high strategic value and potentially conflicting stakeholder expectations. It is not expected that the drive for more partnerships will reduce on the foreseeable future, rather as events unfold, it appears that there is widespread acceptance of the fact that in the years to come, there will be a transition to a world where Government will become overseers of services, and the private sector becomes the major provider of infrastructural services (Gavin & Bosso, 2008). In this same setting, the market exists for crop of professionals who by education and experience are ready and willing to take the challenges of successfully delivering these projects.

Table 3
Example of PPPs in Two States in Nigeria

Collaborators	Title	Focus
OAU/NUC/UNESCO Partnership Workshop	Workshop on strengthening the capacities of Universities in Science and Technology Policy and Innovation Mgt	Training and Capacity Building
Ogun/Ondo State Government, Chevron, Shell, and British Gas	Development of Olokola Liquefied Natural Gas (OKLNG)	Oil and Gas Development
AFC, Ogun-Ondo State Government	Seaport Development	Seaport Development
Consortium Company and Ogun State Government	Agro Cargo Airport Development	Airport Construction and Management
Lagos State Government and Consortium of Banks	Concession of Lekki- Ajah Expressway	Road /Highway Construction
Lagos State Government and Consortium of Banks	Concession of Ojoo – Badagry Expressway	Road /Highway Construction
Guangdong Company and Ogun State Government	Igbesa- Ogun State Free Trade Zone development	Free Trade Zone Development
Ipem, Ogun-Ondo State Government	Olokola Free Trade Zone	Infrastructure Development and Zone Managing
Ministry of Transport, Nigeria and Chinese Construction Company (CCC)	Lagos – Kano Railway Development	Transportation Development

Notwithstanding these arguments, evidence shows that infrastructure provision is becoming a herculean task for the government alone especially in a mono-culture economy like Nigeria. Factors such as deteriorating revenues coupled with weak administrative capacities have constrained the provision of these facilities by the government. For example, a Presidential Projects Assessment Committee (PPAS) submitted a report in May, 2011 which identifies 11,886 ongoing and abandoned federal infrastructural projects which will require 7.78 trillion Naira ($49.6 billion dollars) to complete (This Day Newspaper, 2011). This had lead to dotting the landscape in various parts of the country with uncompleted projects. These projects are estimated to be completed in the next eight years. Notably, the committee identified lack of direction in project management as one of the root cause of the problem.

CONCLUSION

This work has examined the role of project management in the process of infrastructural development through the instrumentality of the notion of sustainable development. We have established that despite the potential market for project management professionals, there is a gap in the educational path that would lead to the emergence of project managers as a profession to be reckoned with. We therefore present a framework with which project management education can be used as a catalyst for sustainable infrastructural development, highlighting potential challenges and opportunities.

We advocate for the intervention of International Project Management Institutions to increase awareness about the profession in a bid to 'market' it to the Universities. With an expansion of universities offering project management at the undergraduate level, there will naturally be a gradation to the establishment of post-graduate studies in Project management in Nigeria University. However, to ensure that tacit knowledge (experience) is integrated to the learning process (which, if located in a college of engineering or built environment would be five years), attention must paid to the mode of learning. We advocate for a direct linkage between Project-based organizations and these tertiary institutions that will accommodate student's participation in some form in project delivery over a reasonable period of time. We advocate for a work-based learning approach that would see undergraduate students attached to high powered projects to gather hands-on expertise before graduation. Exchange programmes with peers outside the country would also provide an avenue for garnering exposure, testing leadership skills and team working-all integral to the personae of a project manager. A graduate of Project Management would therefore come ready with a suite of skills, knowledge and experience, which would be industry specific, and this would make him/her more useful in the delivery of infrastructural projects. Undergraduate study will also serve as the critical entry point for future expert education. Further studies will include certifications and post-graduate studies. We strongly urge for the inclusion of a special category of certification for graduate Project Managers to provide a

psychological linkage with the profession.

A clear path towards expertise will ensure that infrastructural projects are populated at every stage, with professional Project Managers who are trained to deliver the expectations of all stakeholders.

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