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Construction Industry and Research Rationale in Cameroon and Africa

*Franklin Ngosong Tougwa**

ABSTRACT

The construction industry is large and diverse, with lot of companies and professional bodies. This makes it thought-provoking to develop a common vision and priorities. Activities in the industry are always term as project and these projects must be procured and managed thus making the concept of procurement and project management inevitable in the construction industry. This paper will begin by briefly introducing the reader to the construction industry and try to find and give appropriate definition for the industry. This paper identifies and explain the relevant area of professional practice such as construction project and procurement management in the context of the construction industry to a reader who is unfamiliar with it. The paper further investigate the rationale and importance of research in construction projects and the construction industry in Cameroon and Africa. To help focus efforts around research and innovation, this draft strategy have come out as a result of literature review and process of personal reflection with appropriate references and effective use of relevant theories to corroborating evidence that articulate a convincing rationale in research in the field on Construction with particular emphasis in Cameroon and Africa. The construction type referred to in this paper deals with all types of projects in the building and civil engineering industries or the public sector as generally called in some countries.

Keywords: *Construction; Industry; Research; Management; Project; Procurement; Development.*

1.0 Introduction

The importance of the main activities or distinct areas involve in construction projects can never be undermined as those activities or distinct areas each plays a great role in the generation of project values. Project management and procurement is one of the distinct areas that require the project manager attention and knowledge.

The rapid growth of the construction industry in Cameroon and Africa and its rising number of sophisticated and complex construction projects needs competent management and research. This calls for the need of well qualified construction managers. Owners and executives are no longer former labourers who used to “swing a hammer” and now own their own companies. Management candidates today are increasingly being chosen from the ranks of college and university graduates (Dorsey 1992). These managers or to be managers need to have a sound knowledge about project and

procurement management and related activities in the construction industry.

The description of Africa by the World Bank, the African Development Bank and the International Monetary Fund as a place to invest because of its fast growth rate with better return on investments has attracted foreign investors in to infrastructural development projects in Cameroon and Africa.

Many large construction companies today prefer people who combine industry work experience with a higher degree in Construction Management to handle a management position (US Department of Labor, 2005). The management skills necessary to run highly sophisticated construction companies are now progressively being found in master’s degree graduates (Berryman and Nobe, 1999) and graduates from the Professional Doctorate in the built environment programme.

In the construction industry, project management (PM) theory and practice have undergone a transformation – from studying and understanding projects with tangible outcomes that are of finite-

**School of the Built Environment, College of Science and Technology, University of Salford Manchester, the Crescent, Salford, M5 4WT, United Kingdom (E-mail: tougwa@yahoo.com)*

duration [such as delivery of constructed infrastructure or information technology (IT) products] to radically reflecting upon whether some types of project really exist at all in any concrete or conceptual sense (Hodgson and Cicmil, 2006). Project management has become a very common activity performed by most organisations or companies nowadays. The different activities involve in construction needs the attention of specialised professionals to those different areas or activities.

2.0 The Construction Industry

Often a times is difficult to say exactly what the construction is all about as at times is being refer to as the construction industry and at times as the building and construction industry.

This industry is defined in different ways based on the nature of the construction projects and features of the industry product which are indications of what the construction industry include or does not include (Ofori 1990). While Lang and Mills (1979) in Ofori (1990) sees construction as an aggregation of businesses engaged in closely related activities, Nam and Tatum (1989) suggest that construction refers to all types of activities associated with the erection and repair of immobile structures and facilities.

According to Hillebrandt (1984), construction covers different parties involve in the construction process and the suppliers of the industry's inputs.

Statistical review of construction in the United Kingdom interpreted construction as the resources used in construction directly, the product of activity, and the financial and operational aspects of the building materials and construction industries (Ofori, 1990). Construction implies designing and building facilities to meet specific needs. Most of the industry's research advances come from solving specific problems when encountered on new projects; often this involves applied scientific and engineering research of a very high order (Paulson et al, 1975). Paulson et al (1975) describe the construction industry as an industry with "a state of affairs with seemingly contradictory qualities". The industry contributes greatly to the gross national product of most countries, yet the vast majority of the stakeholders in the industry small are businesses.

Construction is highly fragmented and sometimes with a lot of conflicting issues as it

involves a lot of different stakeholders and participants involving architects or designers, engineer, constructors, regulators, suppliers contractors etc. with different skills in their specialised areas, yet is still difficult to understand how these different people come to work together forcing Paulson et al to say it is difficult to really define the construction industry. On the other hand the department of National Treasury of the Republic of South Africa (2012) describe the construction industry as a broad conglomeration of industries and sectors which add value in the creation and maintenance of fixed assets within the built environment.

Paulson et al stipulate that to really understand the industry, one's scope must be extend to include equipment manufacturers, facilities designers and materials suppliers, public and private consumers of construction services, many of whom have considerable construction expertise of their own.

As asserted by Ofori (1990), delineation is the main problem in getting a clear definition of the industry, as the different definitions by different authors portray the industry as a series of related but discrete activities since different participants are involve in the construction process.

However, effort have been made to get a standard definition of construction. In this light, the International Standard Industrial Classification of all Economic Activities as cited by Ofori (1990) defines construction as-construction, altering, repairing and demolishing building; constructing, altering and repairing highways and streets and bridges; viaducts culverts, sewers, and water ways; piers, airports and parking areas, dams, drainage, irrigation, flood control and water power projects and hydroelectric plants; pipe lines; water wells; athletic fields, golf courses, swimming pools and tennis courts; communication systems such as telephone and telegraph lines; marine construction, such as dredging and under water rock removal; pile driving, land drainage and reclamation; and other types of heavy construction...mining services such as preparing and constructing mining sites and drilling crude oil and natural gas wells...specialist trade contractor, activities.

The assembly and installation on site of prefabricated, integral parts into bridges, water tanks, storage and warehouse facilities, railroad and elevated right-of-way, lift and escalator, plumbing ,

sprinkler, central heating, ventilating and air conditioning, lighting and electrical wiring, etc. systems of buildings and all kinds of structures... Departments or other units of the manufacturers of the prefabricated parts and equipment which specialise in this work and which it is feasible to treat as separate establishments as well as business primarily engaged in the activity, are classified in this group.

From the above definition, one can deduce that the construction industry involves the engagement of enterprises involve in civil, electrical and mechanical engineering works on both new and already existing buildings.

According to Ofori (1990) the definition of construction adopted by the United Nations is explain by The Department of International Economic and Social Affairs as follows;

The whole of construction activity consist of the following;

1. Construction industry proper: contract construction by general builders, civil engineers and special trade contractors;
2. Contract construction carried out for others by establishments or organisations classified to industries other than construction;
3. Own-account construction carried out by independent units of enterprises or other organisations not classified to the construction industry proper;
4. Own-account construction carried out by establishments or other organisations not classified to the construction industry, with no independent construction unit ; and
5. Own-account construction carried out by individuals.

General indicators of activity (i.e., data on construction enterprises and value of work done)... refer to units classified under (1) and (3)

The above definition is clear indication of the fact that there is lack of consensus in the definition of construction industry. The need for a better and clearer definition of construction to better understand the industry and improve it is inevitable. The industry may therefore be defined as that sector of the economy which plans, designs, constructs, alters, maintains, repairs and eventually demolishes buildings of all kinds, civil engineering works, mechanical and electrical engineering structures and other similar works (Ofori, 1990).

The construction industry offers an exciting, dynamic work environment .Managing the supply chain has become a mantra for the industry and lean construction is currently a buzzword (Fellows et al, 2009).

3.0 Construction Project Management and its Practice

Amongst professional practices practiced within construction is that of construction project management.

In response to industry and academia demands and in its mission to contribute to the creation of a modern, progressive, and responsible construction industry; able to meet the economic, environmental and social challenges faced in the 21st century, the Chattered Institute of building, Bale (2010) gives a definition of construction management that goes beyond a description and provides an agenda for improvement. According to Bale (2010), construction management 'is the management of the development, conservation and improvement of the built environment exercised at variety of level from site and project through the corporate organization and its clients, to society as a whole'. Bale explain that construction management embraces the entire construction value stream from inception to recycling, with focus on the commitment to sustainable construction which incorporate a wide range of different services.

Hendrickson and Au (2008) specify that project management in construction involves a set of objectives which may be accomplished by applying a series of procedures subject to limited resources. Conflicts are likely to arise between the stated objectives with regard to scope, cost, time and quality, and the lack of sufficient human, material and financial resources. The creation of new alternatives and the necessary adjustments should be made at the beginning of the project to resolve such conflicts.

Subsequently Hendrickson and Au (2008) stipulate that the functions of project management for construction generally include the following:

1. Specifying the plans and objectives of the project. This include the description of scope of the project, budgeting, scheduling, setting performance requirements, and selecting participants to take part in the project.

2. Effective use of resources through procurement of labour, materials and equipment as prescribed in the schedule and plan.
3. Implement different operations by proper coordination and control of planning, design, estimating, contracting and construction in the entire process.
4. Develop proper communications and conflicts resolution mechanism among project participants.

Construction management is guided by a system of values that demonstrate responsibility to humanity and the plant's future which is being informed, supported and challenged by an independent academic discipline.

Construction management is an essential element of the success of construction projects. This is an evolving role that is creating change in the entire industry, both in the developed and developing nations. Construction management practices are used for effective project delivery, contract compliance, and quality assurance.

Good project management in construction relies on balancing the key constraints of time, quality and cost in the context of building functionality and the requirements for sustainability within the built environment (Chartered Institute of Building, 2014).

Different systems, subsystems and components can be identified on several levels of construction practice which allows the attention of construction project management to be concentrated on a certain subsystem or component. There is a time limitation for this to bring it to a certain state of study, investigation, design, realization or operation (Knoepfel, 1992).

The practice of construction management does not only help to supervise operation concepts and layouts of existing and new parts of facilities, but it also help to manage the overall configuration of the system as well as control the interfaces.

According to Knoepfel (1992), by understanding the physical systems, project management provides the technical basis for answers to economic, time-scheduling, quality, quantity and organizational questions in the management of small, medium-size and large construction projects.

The project manager, who represents and act on behalf of the client has as main objectives as posit by the Chartered Institute Of Building (2014)-the duty of 'providing a cost-effective and independent

service, selecting, correlating, integrating and managing different disciplines and expertise, to satisfy the objectives and provisions of the project brief from inception to completion. The service provided must be to the client's satisfaction, safeguard his interests at all times, and, where possible, give consideration to the needs of the eventual user of the facility.

Motivating, managing, coordinating and maintaining the morale of the entire project team is the key role of the project manager. The project manager has that continuous duty of exercising, control of project time, cost and performance.

One specific area of practice within construction project management is procurement management. Procurement is commonly seen as the act of getting equipment, material or suppliers. It is the process which creates, manages and fulfils contracts with the involvement of different processes which are likely to differ from one domain to another and may involve different people.

Ordinarily, Mak (2013) defines procurement as a careful, usually documented process towards achieving an outcome within a given timeframe. This document is usually known as procurement specification and it accompanies every tender.

Researchers in construction deem it necessary to find a clear definition of procurement as used in the construction industry but has not been that easy as different researchers has come out with different definitions of the term procurement. Mohsini and Davidson (1989:86) as cited by Rowlinson et al (1999) defines procurement as 'the acquisition of new buildings, or space within buildings, either by directly buying, renting or leasing from the open market, or by designing and building the facility to meet a specific need.' During a debate at the Montreal Symposium of 1997, procurement was accepted to be define as 'a strategy to satisfy client's development and/or operational needs with respect to the provision of constructed facilities for discrete lifecycle' (Lenard and Mohsini, 1998:79). McDermott and Jaggar (1991) argue that such definition is limited to developed market economies as when comparing projects or project performance across national boundaries. According to McDermott and Jaggar (1991), Sharif and Morledge (1994) supported their argument by drawing attention to the inadequacy of the common classification criteria for procurement systems to enable comparisons globally.

Even within the developed nations, the concept of procurement varies from country to country. At its meeting in 1991, CIB W92 developed a working definition of procurement as ‘the framework within which construction is brought about, acquired or obtained (McDermott, 1999). McDermott (1999) stressed that this definition is useful as it is not only broad and neutral but it also encourage a strategic interpretation, and it is applicable to both developed and developing market economies.

Procurement in the construction commences once a need for engineering and construction works has been identified and ends when the works are completed.

Research will be further focused on this area of practice in the construction industry in Cameroon and Africa.

4.0 Research Rationale in the Construction Industry in Cameroon and Other African Countries

According to Gale and Fellows (1990), the construction industry of all countries are faced by many difficulties and challenges. There is continues research underrating to address the difficulties and challenges. This has also been confirmed by Ofori (1990).

Some work sponsored by some donor agencies has been done in the area of knowledge to improve the construction industry in developing countries such as Cameroon and other African countries. At the initial stage some progress were made and the prescriptions were applied to several countries but unfortunately the level of practical achievement have been disappointing, says Ofori (1993). He further stressed that the problems faced by the construction industry in developing countries like Cameroon are more serious, more infinitely fundamental and more complex with a more pressing solutions than those of the developed nations.

According to Wells (1986), literature suggests that the role of construction in the economy reaches a plateau when a country attains the middle-income stages as it progresses in terms of socio-economic development, and then declines as the country attains ‘developed’ status. In this regards, Ofori (2007) talk of an urgent need to undertake research to propose the necessary action to be taken so developing countries can derive the greatest benefit made by the

contribution of construction in national growth and development.

Notwithstanding there urgent need for research work on construction in developing countries as proposed by Ofori. He equally posit that the pace of research has greatly slowed down almost to a halt. Ofori (1993) noted that his observation is not new as research on construction in developing countries (Cameroon and Africa inclusive) is at the crossroads.

This calls for the need of appropriate research in construction in Cameroon and Africa as a whole as Ofori sees a broad field of research among others such as policy formulation and programme implementation as ways of improving construction in these countries.

For the past years, different steps are being taken at both the national and international levels to intensify the fight against low life expectancy, illiteracy, high infant mortality, poverty and other issues that hinders socio-economic development of a nation.

This is seen at the international level as world leaders and some international organisations met at the Millennium Summit of the United Nations in 2000 and adopted the United Nations Millennium Declaration with the commitment to help achieve the following Millennium Development Goals by 2015, with each goal having its specific targets, and dates for achieving those targets (United Nations. Department of Economic, 2008);

- To eradicate extreme poverty and hunger
- To achieve universal primary education
- To promote gender equality
- To reduce child mortality
- To improve maternal health
- To combat HIV/AIDS, malaria, and other diseases
- To ensure environmental sustainability
- To develop a global partnership for development.

In order to acceleration progress for the attainment of the goals and their targets as set aside, the G8 finance ministers agreed at their summit in the UK in June 2005 to provide enough funds to some financial institutions such as the World Bank, the African Development Bank (AfDB), and the International Monetary Fund (IMF), to cancel \$40 to \$55 billion in debt owed by members of the heavily indebted poor countries (HIPC). This debts cancellation was to allow these countries to redirect

resources to programs for poverty alleviation, health and education improvement. Cameroon and many other developing countries benefited from these debts cancellation.

Foreign investors are attracted to infrastructure development projects in Cameroon and Africa as the World Bank, the African Development Bank and the IMF, believe that Africa is the place to invest because of its fast growth rate with better return on investments. By the year 2010, an estimated forty percent of the African population lived in urban areas. This figure is expected to rise to about sixty percent by the year 2050. Currently with fifty-four countries, Africa is having just fifty-two cities with more than one million inhabitants. This number is expected to grow to seventy-five cities in the future, writes research Analysts Orendo-Smith and Ganyeka (2012).

Some philanthropic organisations and individual philanthropists are helping Cameroon and other Africa countries to attain such goals.

Is our duty as construction researchers, mostly those of us from those countries to get ourselves better equipped and engage ourselves in the infrastructural development projects and contribute in poverty alleviation in those countries. Adequate research in construction is vital to achieve this.

Some work has been done by some researchers that has led to the establishment of some main attributes of the activities of the construction industry and the construction industry itself and relationships among the activities and the industry which shows the need for research and provide the basis for such research. These include;

- The creation of jobs by the construction industry as labour intensive technologies are viable (Ofori, 2007)
- The contribution of construction to national socio-economic development by building infrastructure and productive facilities (Wells, 1986)
- The use of construction for the entrepreneurial development and technological transfer to citizens of a country as construction takes place in every part of the country (Turin, 1973, as in Ofori, 2007)
- Construction is a large sector of the economy as it is a big contributor to the national economy during each period (Hillebrandt, 2000).

- The role of construction in the achievement of sustainable development (UNCHS, 1990b)
- Satisfaction of the desire of donor agencies to achieve best value for their development assistance (World bank, 1984)
- Realisation of the fact that buildings and other infrastructures needs maintenance throughout their life-cycle (School of building and Estate Management, 1991 as in Ofori, (1993).
- The need and importance of addressing the dreadful situation of housing and other infrastructures in Cameroon and Africa.

As posited by Ofori (2007), the emergence of new issues calls for the need of researchers to focus research on construction in developing countries involving Cameroon and Africa. As mentioned by Ofori, some of these issues are: (i) health threats posed by HIV/AIDS and avian influenza pandemics; (ii) the involvement of cultural issues on big projects; (iii) the international agreement on the need to fight poverty; (iv) the internationalisation of construction at the dawn of globalisation and liberalisation of economies; (v) the world's concern on sustainable development and environmental sustainability; (vi) the involvement of the private sector in providing infrastructure and other construction projects; (vii) the formation of economic blocs and common markets by different regions.

The Cameroonian population and other developing nations today are talking about vision 2035 as emerging nations. This can hardly be achieved without strong participation and improvement in the construction industry or public works sector as infrastructural development plays a major role in that. To achieve such a goal or vision, some of the skills that the construction industry must have is a more knowledgeable client base that has better procurement skills, good co-ordination and forward planning of both central and local government building programmes. It is therefore of the interest of these nations that research is undertaken on how their construction industries and firms can participate in attending such vision. There is also a need for research to better understand how productivity can best be measured in relation to the various aspects of the industry what are the best measures of industry productivity, company productivity, project productivity and task productivity (BRANZ, 2013).

Research needs to be to get more viable and long lasting solutions to the problems and challenges plaguing the industry. The challenges are forcing the construction industry to change its traditional approaches to design, construction, refurbishment, and maintenance. These challenges are setting new targets and creating new scope for designers, engineers, manufacturers, contractors, technologist, and researchers (Fairclough, 2002).

Despite the intensive competition among construction companies in the free enterprise system, technological and managerial advancement in the industry still remains trivial. There is need for investment in research in the construction industry to seek practical and proper solutions to the increasing problems involve with increasingly large and complex projects coming up every day in Cameroon and Africa.

5.0 Importance of Research in the Construction Industry

The development and implementation of policy and practice in any industry works best when it is anchored in an evidence-based approach. This is especially important in building and construction where the consequences of policy and practice are in place for a long time (buildings have long lives and are very visible) and mistakes can be difficult and costly to fix (BRANZ, 2013).

History holds that when compared to industries like the pharmaceutical, automotive, electronics industries where much have been invested in research and development little is done about that in the construction industry. One may argue that research and development in such industries needs to be on the rise because they need to keep up with the fast pace of technological advancement in those industries due to the short life cycle of their products so they can keep up with market competition. On the other hand, in the construction industry, there is little economies of scale since each project or product has its own specific design as per the owner's request, the product development cycle and product lifespan is longer. Economies of scale can only be seen in the housing or suppliers of materials. Some people believe payoff is uncertain when investment is made on research in the construction industry. That conception about research in the construction industry is changing as some construction firms in

developed nations have seen the need to get involve in research to advance technology because they have realise technology is an important competing factor. Some construction companies even own their own research institutes.

A good number of research institutes and researchers in construction issues are coming up nowadays. E.g. Technical and Test Institute for Construction Prague (TZUS), Czech Republic, Research and Development, Building and built environment (VTT), Finland, Building Research Establishment (BRE), United Kingdom, Centre Scientifique et Technique du Bâtiment (CSTB), France, Technical Research Institute of Sweden (SP), Sweden, The Chinese Research Institute of Construction Management (CRIOCM), The National Institute of Construction Management and Research (NICMAR), just to name a few.

In preparation of the 6th edition of the European Conference of the ECTP (European Construction Technology Platform) on research, development and innovation in Construction which was held in Brussels in June 2014, with emphasis on the future of the Built Environment, Luc Bourdeau, Secretary General of ECTP and E2BA, Manager for European Affairs at CSTB's Research and Development Directorate says "The built environment (homes, offices, transport infrastructures, cultural places, etc.) is where we spend more than 80% of our time". "The quality of the built environment therefore directly impacts the quality of our life. But the built environment is also crucial to many industries and services. Consequently, it plays an important role in many economic sectors. Challenges such as management of energy, the impact on the environment, safety and more generally quality of buildings are becoming increasingly important and need to be tackled within an integrated approach. Socio-cultural aspects such as our usages, life styles, history and cultural sensitivities are also essential. Everything related to how the built environment functions must be taken into ACCOUNT in changes to construction and development. How can these different criteria be reconciled? The 6th ECTP conference focuses on this subject so that progress with the built environment can be made over the next 25 years". [<http://www.cstb.fr/actualites/english-webzine/anglais/brussels-2014.html>, Accessed date, March 21, 2015]

Answer(s) to Bourdeau question can only be gotten through adequate research. Professionals or stakeholders in the industry must be committed to research. Proper answers or solutions to the challenging problems in the construction industry and their proper application as deemed by research will make the world a better and safer place. Lemer (1991) remind us that if research is neglected on the science and technology of the construction of buildings and other facilities, then while we are reducing our chances of competing with other industries in terms of new ideas and inventions, we are equally limiting our abilities to use those new developed ideas and inventions. Lemer equally warn that such limitations might bring us lesser benefit on future construction than it otherwise might, individuals and entire nations will then suffer.

According to Kulatunga et al (2006) , the invention of new ways to deliver construction projects in an environmental, economic and socially acceptable manner will not only help us face the challenges in the industry but will also help raise the profile of the industry. Kulatunga et al sees research and development as a key factor which can help not only in the development of effective and efficient construction process, new materials, advance technologies but also help in developing new procurement routes and new managerial structures. They also emphasise that the creation of the opportunity for construction firms to compete in the world market can be brought about by research and development activities. These activities help the construction industry in achieving excellence.

According to Constructing Excellence (2005) as cited by Kulatunga et al (2006) , excellence in construction means:

- creating individual, community and national prosperity (wealth) through provision of products and services;
- creating opportunities for living, learning, recreation and development that will advance the interests of the community at large;
- exceeding all community expectations for products and services offered and creating added value;
- achieving expected margins and ensuring value is delivered;
- earning community respect for aesthetic, safety and environmental standards;

- having integrated teams delivering world class constructed products, buildings, facilities and infrastructure incorporating quality components, systems and products;
- respecting its people and the wider community;
- exporting a range of products and services to other industries.

One may be tempted to think that since most construction projects rely mostly on conventional technologies and methods which are already well known and have been in usage for quite a long time than the state-of-the-art technologies, investing so much in research may not be worthwhile. It will also be difficult to deny the fact the construction industry is not a technological-driven industry when compared to other industries such as the bio, electronics and chemical industries that derives from scientific and technological discoveries but technology in the construction industry have been developed basically and applied as the means of executing each project. But with the above challenges as outlined by Bourdeau and other challenges, research in the construction industry is inevitable. The construction industry have to move with changing times.

As explain by Tatum (1987) the construction industry is perceived as non-innovative and low-tech industry because of its passive attitude towards technology because people look for appropriate technologies and methods or modify already existing ones to resolve particular problems when they occur in a project.

This kind of innovation is project-specific and not develop for future use. Innovation in knowledge and technology in the construction industry needs to be shifted from project-driven to market-driven thus formal research needs to be encourage. This is not only supposed to be done only in universities or institutional level as it is the case now, construction firms in the private sector needs to actively get involve in research as their counterparts in different industries.

Kulatunga et al (2006) says Latham (1994) in his report “Constructing the team” made mention of the fact that reforms in tendering, quality management, contracting, education, design process, training etc. will improve the efficiency and competitiveness of the industry.

According to Kulatunga et al (2006), DTI (2004) outline the key role of research and development in

the development of management tools such as human resource management, different procurement routes, value management, , whole life costing methods, risk management, health and safety management tools, etc. While such developments make best use of the value for money, and reduce the associated risks with the construction process, it also provides a healthier and a safer built environment, meet clients' expectation and hence ensures their satisfaction. The way to produce new products and services at reduced cost, time, and better quality and the development of new construction methods, processes and new materials are enabled by research activities.

The development in technology and management enhance the efficiency and effectiveness of construction processes and the final product and maximise the profits of the construction company (Hampson and Brandon, 2004). While Hampson and Brandon (2004) affirm the identification of positive relationship between the investment of research and development work and productivity of organisations, Fairclough (2002) highlights that it is important to develop a strategic vision to improve the performance of the construction industry and the vision be supported with a research and development framework.

6.0 Conclusions

For Cameroon and Africa to attain their vision of 2035, there is need for infrastructural development as it has great impact in the life of the citizens and the entire nation.

Concerted action needs to be taken towards research on construction in Cameroon and African nations to ensure the use of most adequate means or ways to handle their construction projects in cost effective and environmental friendly manner without jeopardising the quality of the projects.

We have been educated by the tax payers' money thus, we need to get involve deeply in construction research so we can give back to the community what they have given to us.

The coming up of a good number of research institutes and researchers in construction issues nowadays is testimony of the need of research in that industry.

This research needs to be a systematic process of investigation which is designed carefully and is

executed in respect to certain methodological principles. It should be involve in "finding out" which is aimed at knowledge advancement in the field of construction in Cameroon and Africa. This knowledge needs to be added to the existing body of knowledge to help the construction industry in Cameroon and Africa to improve its performance and transform itself towards a desired future state.

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