

IMPROVEMENT OF RESEARCH ACTIVITIES FOR TECHNOLOGICAL GROWTH IN NIGERIA THROUGH PRIVATE SECTOR PARTICIPATION, ENABLING ENVIRONMENT AND ADEQUATE FACILITIES

Hassan Bello

Abstract

This paper examined some of the constraints that constitute impediment to the development of research activities in Nigeria. It specifically highlights how low private sector participation, conducive environment, inadequate research facilities and poor communication network hindered technological growth despite ambitious efforts being made to address the issue. The situation is complicated by identified drawbacks largely, due to low participation of the private sector and unfavourable government policies. It is suggested that the need for high private sector participation be encouraged; provision of adequate facilities, improvement of communication network and sound planning be made for effective research to flourish.

Introduction

Research as a systematic and controlled enquiry is directed towards solving identified problems. It is a planned search for new knowledge. It is a structured investigation or experimentation aimed at finding reasonable answers to carefully articulated questions. Our standard of living today is far better than what it was 50 years ago owing to advances in human knowledge, made possible through the application of scientific research findings.

Nations that accorded research activity the necessary priority it deserves are today reaping bountiful fruits of their foresight. While Nations that failed to accord that priority are the ones classified as the 'underdeveloped' or the 'developing' nations. They are still battling with problems of food, shelter, and political and economic instability.

In the developing countries, such as Nigeria, research have not progressed far beyond what might be described as the threshold level (Nwogu, 1991). This is as a result of the constraints ranging from poor funding, poor attitude to research, inadequate research facilities, and lack of private sector participation to poor means of coordinating and disseminating research findings.

There is a strong conviction that if the above impediments would be overcome, competence and positive attitude toward research will be restored to the minds of researchers and no doubt research activity will become easy, exciting and rewarding in Nigeria.

What Is Research?

Research is a confusing term. It has so many meanings that we must understand precisely what it means in a scholarly sense. When many students encounter the term for the first time in a truly professional and academic sense, it bewilders them. Research is the manner in which we solve knotty problems in our attempt to push back the frontiers of human ignorance. Research is a way of thinking. It is a way of looking at accumulated facts so that a collection of data (information) speaks to the mind of the researcher. Several authors have defined Research in their own terms. For instance Nworgu (1991), Yalams and Ndomi (2000) considered research as a process, which enlists the assistance of the scientific method in solving puzzling problems. Similarly Hornby (1963) and Gay (1992) perceive research as a careful and purposeful investigation with a view to discover new facts and information about an entirely unknown phenomenon or to discover new ways and techniques of going about or improving the existing practice. Research studies are commonly classified based on the purpose of the research, and the method of conducting the research (Garba, 2000). There are several varieties of research activities: applied research, action research, developmental research and so on. Educational research studies should ideally follow these procedures as clearly put by Nworgu (1991) as follows:

- 1) Identifying and defining the problem.

- 2) Reviewing the literature.
- 3) Formulating research questions and hypotheses.
- 4) Designing a study to collect the necessary data.
- 5) Collecting pertinent data for answering the research questions and test the hypothesis.
- 6) Analysing the data to answer the research questions and test the hypothesis.
- 7) Drawing necessary inference/conclusion based on the analysis.

Beyond all these, Gay (1992) believes that there are specific procedures determined by the research method. Each research method is designed to answer a different set and type of questions.

Unfortunately, many students have laboured under the delusion that looking up a few and writing them down in a documented paper constitutes research. Such activity is of course, no more than fact finding and fact-transcribing. No amount of mere transportation is acknowledged by footnote-can be dignified by the term research.

This fact transportation in colleges is often glorified by calling the end product a "research paper", a "research report", or a "research document". Without the student's having been given a single direction of specific requirements of basic research. As a result many higher institutions students have difficulty in writing their theses and dissertations. There are differences among researches in education, humanities, medicine, law etc. (Gay, 1992). The major differences according to Gay, lies in the nature of the phenomenon being studied. It is considerably more difficult to study situations involving a human being because he is by far a very complex organism. Rigid controls that are ideally maintained in science laboratories are very impossible in researches involving

human beings. There is every tendency for the subject to adjust their behavior for the purposes of the research. These days many researchers are inclined to use of the scientific method because it consists of a number of steps to guide the research work.

Purposes Of The Research

Research in general is a search for solutions to problems of answers to questions. Going by this, many activities of the individual in the course of his day to day functioning can be described as research is aimed at:

1. Highlighting some of the major constraints that hindered the progress of technological researches in Nigeria.
2. Suggesting some alternative means through which research activities can be improved.

Problem Statement

Any successful research must be planned properly and adequately funded. In universities and research institutions, research has assumed an indispensable status in the academic development. The situation in this country has been compounded by the present economic down-turn, the required infrastructure and facilities for meaningful research are either lacking, inadequate, obsolete or malfunctioning. There is also low private sector participation in the commercialization of research findings. Such conditions have failed to provide a conducive atmosphere for the conduct of researches in many institutions in the country as for instance reported by Onah (2000) and Agabr. (2000). This indicates that despite the various government efforts to sponsor research activities in various capacities, certain constraints appear inevitable and these need to be given due consideration. Thus, this write up is not only relevant but also timely.

The major constraints highlighted focus on the private sector participation, enabling environment and the inadequacy of the research^hfacilities. There may be other constraints but this paper intends to analyze these major factors to see how the conduct of researches in technology can be improved in Nigeria.

Private Sector Participation

The private sector participation in the utilization of research findings from research institutes, universities, polytechnics and colleges of technology is very minimal, this is because big industrial organizations do not involve Universities in their research and development efforts. The private sector are generally not interested in supporting research projects even if it is for the purpose of improving their operational effectiveness. Instead, they prefer to invest in areas where they think they can make quick profits. Neither the private sector nor the government do challenge the institutions of higher learning with-defined tasks. For instance, the case of Steyr Company and Tam-Tam cola in Bauchi and Gombe states respectively. At the moment of inception these companies were doing well. All of a sudden the companies stopped production for reasons best known to proprietors. Had it been any of the research oodles were involved alternative solutions would have been proffered. Compared to other developed economy, private sector participation ranks high. This is true in the United States, UK and Japan where virtually all the technical universities and institutes are state-owned, but privately funded. If this trend in the country is to be reversed for good, then the role of private sector participation must be relentlessly pursued, encouraged, made effective and sustained.

Commenting on private sector participation and technological emancipation, Onyeukwu (1989) stated that if the impact of technical education is to be felt in the country, technological growth to flourish and the much talked of technological acquisition and transfer to be a reality, the attitude of the private sector participation in technical education must be changed. In the same vein, Garba (2000) observed that unwillingness of the industrial organizations to commercialize research findings has been a problem to many breakthroughs. In this regard, research institutions should find a means of bridging the communication gap between them and the private sector commands such that industrial organizations will be encouraged to engage in the commercialization of research findings for improvement purposes.

On the side of the government, researchers and research findings are not usually patronized. There are also the problem of the non-implementation of research results and recommendations on the ground that the information mostly provided by the Nigeria researchers are irrelevant and theoretical therefore can only serve as an academic exercise.

It is high time for both the government and the private sector to understand that expenditure on research activities is not part of expenditure on social services but a separate commitment and investment in development.

Enabling Environment

Research and teaching are the primary functions of various departments in the tertiary institutions of the world. For these function to be performed effectively human and material resources should be in place to make up a good atmosphere for the teaching and research.

It is unfortunate for Nigeria, a country that has been crying for technological growth, technological emancipation, and technological breakthrough has little to show up in terms of the enabling environment. No matter how good the teaching staff are they may not deliver the goods without adequate materials. This is an obvious problem to all workshops, laboratories, studios and libraries. Few technical writers exist in Nigeria and it is not enough to rely on our local authors and publishers for all library needs. The Federal government had initially gone into agreement with some foreign countries like Bulgaria for the purchase of equipment which eventually failed. Although, it was of recent some educational institutions started enjoying financial support from the Educational Trust Fund (ETF) in the procurement of teaching and workshop facilities. One will imagine up to the time of this write up that the commonest electronics component "the resistor" is being imported into the country. If there were industries established for the production of such components, it will be easier and cost effective for the institution students alike to procure and utilize them for their research projects (Onyeukwu, 1989).

The availability of these industries, and hence mass production of the electronic components and accessories will no doubt facilitate design and construction of electronic circuits thereby creating an enabling environment for more researches in technology.

Research Facilities

Research facilities are those things needed to enhance or make research activity easier. The inadequacy of these facilities is problematic and can constitute a serious drawback for both the teaching and researching in our educational institutions. And this will be discussed under the following subheadings.

Text Books and Libraries

The issue of textbooks and libraries deserves special attention. Any society without a means of disseminating information can be likened to a person without a heart (Ezennia, 1992). Information circulation is a means through which societies survive. The library serves as a unit of academic research. It serves as stock of vital materials including books, journals, periodicals which are scarce, expensive and not easily accessible to students and lecturers alike due to high cost of their prices. Library is a most effective tool for promoting education leading to the new dimension in discoveries through consultations and investigations into the information contained therein.

Despite the role of the library in promoting research and learning activities, Ude (1991) indicated that most school libraries are handicapped, they lack adequate books, journals, periodicals and reading desks. Ude added that some of these materials within two years become obsolete and sometimes delinquent users prevent others from having access to some books in the library by hiding them.

This acute shortage of textbooks and periodicals causes a serious threat to research activities in Nigerian schools. No effective research can exist without corresponding good libraries.

Hard And Software

Research activities can hardly be carried out without necessary materials needed for the particular research. Hardware refers to the tools, machines, or equipment necessary for acquiring knowledge, skill or for conducting research project. While software are the consumable such as paper, wood, metal, fluid, or fuel used by the machines etc. The provision of these hard and softwares will certainly promote quantitative research work. It is for this reason that Olaitan (1996) warned that if lack of equipment was allowed to prevail anywhere, the national goals of promoting science and technology would not be realized. So it follows that where hard and software facilities are lacking some research techniques that will encourage initiative cannot be applied thus, the research activity will suffer.

Computer Usage and Application

Burke and Eakin (1992) defined computer as an electronic device which stores information on discs or magnetic tapes, analyzes it and produces information as required from the data on the disc or tape. Modern times demand that students and lecturers be knowledgeable in the application of the computer for solving scientific and technological problems. Presently, courses in computer are part of the programmes for technology education in some of our universities and other tertiary institutions. The use of these computers in processing and storage of research results is overwhelming. The problem now is providing adequate number of these equipment and their accessories in schools and other research centres,

Apart from the computer usage communication systems such as the telephone, internet, e-mail or the facsimiles are known facilities that have great impact on good research activities especially in the tertiary institutions of advanced countries of the world. According to the words of Nworgu (1991), no researcher in this country can think of using these means to collect data. Perhaps this however was as a result of the capital intensive nature of implementing these networks.

Conclusion

From the foregoing it is clear that development of research activity in Nigeria is surrounded by a number of factors so far identified in this paper. It is therefore, no doubt that with determination, sound planning and provision of better facilities in our research and tertiary institutions, fruitful researches will be carried out and proper application of the findings will transform

Nigeria from a traditional to a technological society in future.

Recommendations

1. For an effective research work to prevail, every senior staff in a research or tertiary institution abroad has access to at least one workshop or laboratory so that his project work would be left for a while without being tarnished by any other person. Therefore, for technology to flourish in Nigeria, the researchers in our tertiary institution should start appreciating that.
2. When research findings are not disseminated they cannot be utilized and this results to wastage. To avoid this, the Nigerian government should improve its communication network such as the telephone, Internet, e-mail, or the facsimile services such that an average researcher can carry out his project at a minimal and affordable rate and easily disseminated.
3. The problem of few technical writers exists in Nigeria and the problem of importing books, printing and binding materials from overseas is also there. Even where there is money, there is often delay in delivery of these materials due to both bureaucratic processes and port clearing formalities. To solve these problems, good spirited wealthy citizens should assist the institutions of learning to procure books and other library materials.
4. If research activity is to be run effectively, good investment for the provision of hard and software must be provided to ensure an enabling environment.
5. Private sector participation should be pursued vigorously and encouraged, by setting aside portions of their profit to support research undertaken, either for the purpose of improving their operational effectiveness or that of the entire public.

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