

Overview of Institutional Structure for Research Activities in Nigerian Polytechnics

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Summary

The paper identified research, innovation and knowledge creation as part of the core mandates of the Nigerian polytechnic. It decried, however the low level of research activities, lack of academic culture in the polytechnic system, and consequently, low pace of technological advancement and industrial growth in the country. Therefore, the paper examined the institutional structures with a view to identifying and appraising adequacy or otherwise of the structures for research activities in the polytechnics and the problems associated with the performance of these responsibilities. It was concluded that a gap still exist in what the academic staff are doing now and what they ought to be doing due to certain inherent problems. Subsequently, the paper suggested measures that hopefully would remedy the drawbacks identified in the institutional framework for conduct of research and publication or dissemination of its results.

Keywords: Nigerian Polytechnic, Research, Journal publication.

Introduction

The need for concerted efforts in research and development by all concerned, in this case, the polytechnics, universities and research institutes to achieve industrial growth and technological advancement in the country cannot be overemphasised. If the pace of technological advancement in the whole world is anything to go by, especially towards the end of the last millennium when the world commenced transformation into a global village, Nigeria as a nation must adopt strategies, which supports vigorous research and development efforts in science and technology and their applications. Adoption of such strategies will warrant an appraisal of the mechanism for undertaking research, the research focus and status and associated problems in these institutions. This exercise will ensure that the institutions are able to contribute meaningfully their quota to national development, and at the same time launch the country in the circle of industrialised and technologically advanced nations of the world. Furthermore, this action will provide the institutions with the opportunity of:

- a. Taking stock of their research and development activities so far and evaluating their relevance to the continuous needs of the national economy i.e. particularly the support of the growth and development of the local industries;

- b. Reassuring themselves of the relevance of their curriculum for manpower training in science, technology and engineering for national development and of the conviction that they are able to match funding with quality output and/or performance; and lastly
- c. Ascertaining adequacy or otherwise of the framework for research activities within the institutions for coping with the challenges of research and development needs of the country in the new millennium.

Consequently, all stakeholders in the management of Polytechnic Education i.e. the funding bodies and the monitoring agencies, the managers of the polytechnics, the teachers or lecturers, and the clients or customers (students and the industry/employer) will be interested in how the polytechnics are fairing in this regard of research and development. Equally important is the assurance that polytechnic education is still relevant to the development of the country' economy and that it will continue to justify enormous resources invested on this sector of Nigerian educational system. More so that the polytechnics are charged with the responsibilities of, undertaking research relevant to needs of the development of Nigeria and to arrange conferences, seminars and study groups in the fields of learning specified for them (i.e. technology, applied science, commerce and management) (Federal Polytechnic Act, 1990). Coupled with this fact is the persistent call by Academic Staff Union of Polytechnics for parity in status with their counterparts in the universities in terms of salary scales and allowances, and mounting of degree programmes in the polytechnics.

At this juncture, the managers of the polytechnics, the academic staff and the National Board for Technical Education (NBTE) that are directly involved in fulfilment of the aspect of the object of the institution which makes conduct of research mandatory should provides answers for the following questions:

- a. How well is the polytechnic fairing in research activities? And if in their judgement, the polytechnics are okay, then how can we sustain and improve on the performance?
- b. If the polytechnics are performing below expectation, what is the problem and how can this problem be solved?

Whichever way it goes, the bottom line is that all concerned must re-examine the framework of institutional structures on ground in the polytechnic education sector for undertaking research activities. This will enable identification of the strengths and weaknesses in such structures, and remedy for pitfalls can be sought. This argument perhaps may further justify and/or strengthens whatever reasons NBTE might have for organising this Awareness Workshop on research activities for lecturers in the Nigerian polytechnics.

The objectives of this paper therefore are to identify and appraise adequacy or otherwise of the structures for research activities in the polytechnics and the problems associated with efficient performance of these responsibilities. Recommendations that will hopefully remedy pitfalls identified in the institutional framework for conduct of research and publication or dissemination of its results will be made. In addition, this presentation will serve the purposes of sensitising the academic staff on the need to increase their efforts in research activities and encourage them to seize opportunities provided within the institutional structures for conducting research.

Identification and Appraisal of the Structures for Research activities in the Polytechnics

A fair assessment of how efficient and effective the polytechnic education sector is in providing enabling environment for participation in research activities require that its statutory functions and the following structural elements be critically reviewed.

a. Statutory functions of the polytechnics and the conditions of service of academic staff

The Federal Polytechnic Act (1990) and the Views and Comments of the Federal Government of Nigeria on the report of the Commission on review of higher education in the country (1992), specified the participation in research activities as part of Polytechnic functions. In addition, the following provisions in the conditions of service for academic staff and guidelines on the curriculum seem to provide the necessary backing, impetus and motivation required by academic staff for undertaking research activities in addition to teaching:

- i. Academic staff must show evidence of productive research work as a pre-condition for promotion or advancement on the Harmonised Salary Scale for Tertiary Institutions. Hence, they are required to publish articles in learned journals and make presentations of scientific papers at national and international conferences. In addition, it is believed that this will enrich their intellectual horizon.
- ii. Instructors, technologists and technicians must show evidence of technological innovations and /or adaptations as a pre-condition for promotion.
- iii. In recognition of the fulfilment of the aforementioned functions, academic staffs in the polytechnics are given in addition to their normal salaries, a percentage of such salaries as Academic Allowances (i.e. Journal allowance, Learned Society allowance).

- iv. In partial fulfilment of the award of National and Higher National Diplomas, final year students of both programmes must complete research projects under the supervision of academic staffs.
- v. NBTE's specified curriculum which, is regarded a minimum guide syllabus allows flexibility such that examples of practical exercises can be drawn from what is prevalent in the local environment. NBTE believes that the success of the curriculum depends on the articulation of programmes between the polytechnic and industry. The Body therefore, encouraged teaching staff in a particular institution to write their own curriculum stating the conditions existing in their institution under which the performance can take place and to follow that with the criteria for determining an acceptable level of performance. This philosophy allows the polytechnic to solve problems peculiar to its immediate community. Similarly, research efforts undertaken by the academic staff in the polytechnic should address developmental needs of its community.

b. Mechanism for conducting, funding or sponsoring and monitoring of research activities in the polytechnics;

Academic staff in the polytechnics in two ways both as student students' projects and as personally initiated projects carries out research works. Most of the research efforts carried out, as students' projects are usually not original and often do not make significant contribution to knowledge i.e. they do not make large penetrations into scientific unknown. Indeed originality is not a requirement for acceptance of project works presented in partial fulfilment of the award of either of the programmes. In personally initiated research work on the other hand, academic staff strives towards originality and breaking new grounds on the frontiers of knowledge because they want to get results of such efforts published in scholarly journals. Original research works that sought to break new grounds in knowledge are quite expensive and often require assistance of experience and senior colleagues for provision of guidance. Sometimes the facilities needed to carry out original research may be of special nature and sophistication and may not be available within the institution. But for the execution of students' projects and because of time limitation, institution laid as much emphasis as possible on simplicity of research methodology and the use of available infrastructures. This explains in part why not much is usually achieved in terms of paper publication benefit to academic staff in the polytechnic.

As part of staff development efforts directed at assisting polytechnic staff in the personally initiated research projects, Polytechnic Research Committees are established at the institutional and NBTE levels. In addition to funding or sponsorship, the NBTE committee ensures that

such research projects are relevant, well planned with adequate and appropriate methodology / design, and the results are of practical application in our community. Monitoring and indeed funding strategies adopted ensure proper execution of well thought out project. The results of the research works that passed through the committee are in most cases accepted for publication in scholarly journals.

Research Committee at the institutional level is to coordinate research activities in the polytechnic by:

- i. Reviewing, validating and endorsing research proposal to funded by the institution or an external body.
- ii. Assisting the researchers to claim their research fund from the sponsoring body.
- iii. Advising the Rector on the modality of disbursing research funds to researchers.
- iv. Supervising research undertakings being sponsored by the institution or external body in order to ensure performance as contained in the agreement.
- v. Recommending appropriate disciplinary actions against defaulters to the institution's authority.
- vi. Organising seminars and publicity on research activities of the polytechnics.

The objectives of the NBTE's Polytechnic Research Committee on the other hand, are to:

- i. Create appropriate environments for research.
- ii. Coordinate and monitor research efforts in the polytechnic system with a view to funding the ones.
- iii. Ascertain that information on research activities in the polytechnics can be readily available, as such information will not only curb duplication of efforts but also encourage further development on research already done.

Academic staff wishing to take advantage of the funding facilities provided by NBTE is expected to submit research proposal in a specified format through his institution. The proposal must satisfy the following criteria:

- i. The proposal must focus on development of appropriate technology since our local entrepreneurs target the products arising there from for use. On very rare cases do non-technology based projects receive attention for funding. However, such projects, which cannot be funded by NBTE but are found to be relevant to Nigeria's socio-economic sector are recommended for funding either by the institution or sent to related National Body.
- ii. The proposal must be from accredited programme in the polytechnic to ensure that the institution has the capacity in terms of physical and human resources to undertake the project as well as minimise the cost of procuring equipment and consumables for the project which are supposed to be mostly available if the programme were accredited.
- iii. The institution must have a Research Committee through which an endorsed proposal is routed to Polytechnic Research Committee requires that members should be technically qualified and very conversant with the Polytechnic Research Committee's guidelines on research proposals so as to avoid wasteful attempt of forwarding irrelevant project to the Polytechnic Research Committee.
- iv. The proposal which has to be in fifteen copies must be in the right format as contained in the guidelines i.e. Form NBTE/PRC/P.1. In completing this format, investigators should endeavour to give relevant details of the information required since this will form the basis of judging the project's viability or otherwise. Issues like the title of the project, field of research, delineation or scope, rationale / justification, research procedure to be adopted, project working drawing, available / unavailable facilities or consumables, and academic qualifications of the researcher(s) must be addressed.

c. Outlets for publication and/or dissemination of results of the research activities

The last element of the institutional structure for research activities in the polytechnic is the forms in which results of research projects undertaken by its academic staff are disseminated. Out of the several forms through which research results and innovations or fabrications are disseminated, paper presentation at seminars or conferences and exhibitions organised specifically for Nigerian polytechnics are the most commonly used ways employed by researchers in the polytechnic. Publication in academic or scholarly journal is the least used medium. Because the standard and quality of work required for publication in learned journals is perhaps the highest among the forms of publication of research results, the prestige of academic staff in the polytechnic suffers a drawback. In fact it is the low patronage of scholarly journals that separates the academic staff in

the polytechnic from their counterparts in the university in terms of remunerations i.e. salary scale and allowances.

In order to boost the confidence of and encourage the academic staff in the polytechnics in their ability to publish articles in learned journals, NBTE established standard journals of national and international standards. These journals are Journal of Technical Education and Journal of Agricultural Technology. Both journals have on their editorial boards respected and notable academics in the polytechnic and university systems. Prospective authors will get more information on the journals from Planning and Programmes Departments of NBTE or from copies of back issues in the polytechnic libraries all over the country. New intellectual journals namely, Spectrum, Journal of Applied Science and Management and Polymath are a few of the journals that are emerging from our polytechnics in recent time. Most polytechnics, notable among them are Kaduna Polytechnic, Kaduna, Federal Polytechnic, Mubi and Federal Polytechnic, Ilaro are already organising national conferences to discuss issues of national interest and to provide forum for academic staff in the polytechnics to present results of their research activities. Publications of the proceedings of such conferences have been regular and are usually made available to all polytechnic libraries. Unfortunately, however, most of the articles that are being published in the journals emerging from the polytechnic sector are actually contributed by academic staff in the university system. It seems therefore, that certain problems, which appear inherent in the polytechnic system must be responsible; and until they are addressed, low research activity will continue in the system. Consequently, in this paper attempt will be made at cheering some of the problems with you.

Some of the Problems Responsible for Low Level of Research Activity in the Polytechnics

a. Attitude to and competence of polytechnic lecturers in undertaking research & research culture in the institutions.

The development of culture of research and publication is still at its infancy in the polytechnics. The academic staff in these institutions are yet to accept the popular and warning slogan – Publish or Perish, a slogan synonymous with the academic community. Prior to implementation of University Salary Scale (USS) in 1988, article publication in journals and paper presentation at conferences were not made pre-conditions for promotion and progression on the salary scale. Therefore, most senior members of staff in the academics rose with little or no experience in research project planning, execution, paper writing and journal publication. Consequently, these senior academic staff cannot offer academic leadership in this regard to younger lecturers who are just coming into the polytechnic system. Unfortunately, the younger lecturers and instructors are in most cases fresh graduates with background

research experience not more than that acquired during execution of their final year projects. Rather than develop skills for research and journal publication, what is observed is that most of these inexperienced youngsters now engage in publication of handouts printed in the textbook form and present such for promotion and or advancement.

b. Deplorable state of infrastructure facilities for research.

There is no doubt that laboratory / workshop equipment, scientific instruments and other associated facilities required in case of science, technology and engineering based research are inadequate. Most of this facilities, where available and functional are already old and outdated such that precision and accuracy levels of data collected with them do not meet the standard required of publication in international journals. The library support services in terms of provision of adequate reference materials of the primary nature i.e. scientific journals are virtually non-existent in the polytechnics. Provision of textbooks which most polytechnic strive to do can barely support accreditation of their diploma programmes but do not meet needs of researchers as reference materials for original research. Indeed, most polytechnic libraries are mere reading rooms!

c. Inadequate funding and sponsorship of original research

The expensive nature of original research cannot be overemphasised. The cause of this problem is the cost of providing necessary infrastructures, consumables and literature materials that are supposed to be on ground in the institutions. Perhaps it is in recognition of this fact that Polytechnic Research Committee of NBTE emphasises that sponsorship or funding of research will cover purchase of only a few of the essential equipment and instruments that are not available. The fact of the case is that most of the instruments needed for that standard of research NBTE aspires to sponsor are just not there in the institutions. The amount disbursed to the various institutions for funding research is grossly inadequate.

d. Lack of time allocated for research work in the determination of lecturers' workload

Workload of lecturers in the polytechnics has been defined only in terms of teaching hours, and it is such that no recognition is given to their research activities. Indeed, no account is taken of students' projects supervision. Supervision of ND and even HND students can actually take a lot of time off lecturer's personal time and can be frustrating where results obtained from such project work do not meet the standard required of journal publication. The fact that lecturers will have to depend on their own personally initiated research work for journal publication further justifies the reason why the lecturers needed to be given time for fulfilment of this job function. Ideally, workload of lecturers should be defined in terms of hours allocated for teaching, research and administrative activities. Although lecture loads tapers from Assistant

lectureship position towards Chief lectureship status, it is considered lopsided towards teaching activities particularly when senior members of academic staff will have to serve on a number of committees, assume administrative positions, teach larger class sizes and conduct tutorials and continuous assessment regularly.

e. Bottlenecks in publication / dissemination of research results & payment of publication charges

Certain programmes that are peculiar to the polytechnics i.e. Hotel & Catering Management, Arts & Printing, Textile Technology, etc coupled with the fact that research activities in these institution should be relevant to courses of study provided, constraint the choice of learned journal where results of the research activities in these fields of study can be published. With the exception of a few journals that are just emerging from the polytechnics and NBTE, most journals published in Nigeria have limited scope and profile that does not accept contributions in these peculiar fields. Journals published abroad are numerous and of wider scope and hence provide the needed alternative choice. However, payment of page or publication charges in foreign exchange to most foreign journals present yet another problem. Magnitude of the problem can only be appreciated when the exchange rate and the procedure for obtaining it are imagined.

f. Reward system do not seem to encourage participation in research activities

Reward in the forms of monetary remuneration, bonuses, promotion, etc has long been recognised as a motivational factor for workers in business organisations. In educational institutions such as the universities, promotion and smooth progression in the lecturing career has done the magic of motivating lecturers in that system to taking active part in research and make contributions at conferences and in learned journals. Indeed this has earned them prestige more than anything else. The same cannot be said of the polytechnic lecturers. Although, it may sound ridiculous but the truth is that most lecturers in the polytechnics have risen to higher levels through promotion without a single journal publication since introduction of USS in 1988. Otherwise, twelve years of implementation of policy that came with the salary scale is enough to produce lecturers in the status of professor by now. Most polytechnic management have been sentimental on the issue and hence have not insisted on presentation of journal publication before promoting lecturers. The non-implementation of the condition actually has continue to send wrong signals to the younger and junior lecturers who now conclude that the polytechnic system can never promote intellectual development.. They therefore continue to leave the polytechnics for the universities once they acquire higher degrees, which most of them do on part-time.

Conclusion and Recommendations

In concluding, there is no doubt that the instrument that establishes the polytechnics confers on them the role to contribute to national development through participation in research activities; and the largesse associated with the salary scale operated in the system is expected to motivate academic staff in this direction. Careful examination of the institutional structures for performing this role however shows that a gap still exist in what the academic staff are doing now and what they ought to be doing due to certain inherent problems. Hopefully, the drawbacks identified can be solved if the following recommendations are considered for implementation.

- a. Redefinition of lecturer's workload so that hours can be allocated for research activities as done for lectures and administrative duties. In doing so, appropriate time-sharing ratio should be adopted so that time allocated for research will match expected responsibilities. Senior members of academic staff need to provide academic leadership to junior ones and they are to produce more articles for journal publication and presentation at conferences.
- b. Research development policy should encourage collaborative research with lecturers and researchers in other institutions. This will provided the needed assistance and leadership (when working with more experienced colleague) for direction in the conduct of original research and in preparing its report for journal publication. Another added advantage of this exercise is the opportunity it offers for using facilities of the institution of the collaborator. In most cases, these facilities are not available in the polytechnic.
- c. Academic allowances given to academic staff are meagre and cannot support production of reports, postages and publication in learned journals. Most journals now charge fees for publications, and the amount charged and the currency of payment depend on the country where the journals are published. Foreign journals demand payment in foreign exchange. Publications of articles in foreign journals are inevitable and should be encouraged. In addition, it gives the author and the polytechnic name and prestige in international circle. Polytechnics therefore should assist lecturers in the payment of page or publication charges for scientific papers accepted in learned journals.
- d. Library is the nerve centre of research activities in educational institution because it provides for research the much-needed current reference materials. Therefore, the following should be implemented for improvement of library services:
 - i. Sufficient funding of the library so that it is able to perform its traditional role of providing support services to academics

- ii. Pattern of funding should be fashioned after that of the university, where direct provision is made for the library as a percentage of whatever capital subventions to the institution.
 - iii. Polytechnic libraries should get connected to the Internet and then offer E-mail services, a means by which they can make available to lecturers current literature materials through the inter-library lending services.
- e. General funding provision for the Polytechnics should be partly based on the extent of research activities in the institutions. Efforts should be geared towards improving infrastructures facilities in the polytechnics. This should be addressed seriously. The regular capital allocation in the usual subvention to the polytechnic cannot meet the need for providing infrastructures required for research activities and accreditation of science and engineering based programmes. Laboratory instruments, engineering workshop, and studio equipment are very expensive. Therefore, funding in the form of grant is required to refurbish and raise the standard of the infrastructures facilities in the polytechnics.

Thank you for your attention.

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