Evolution of Technical Universities: Challenges and Causes of Mission Drift

EMMANUEL NEWMAN

Abstract

The paper discusses the events and issues that had led to the elevation of polytechnics to technical universities in Ghana. It traces the developmental path of the institutions that have been designated as technical universities from the time of their establishment as polytechnics to the present. Issues that account for mission drift and isomorphism in polytechnics/technical universities are also discussed. We conclude that agitations by staff and students, changes engendered by the senior management of polytechnics, the structure of the Ghanaian economy and regulatory weakness are responsible for mission drift in polytechnic/technical university education and isomorphism in the tertiary education sector. Strategies to obviate mission drift and isomorphism are assessed to foster mission fulfillment in technical universities and promote a diversified tertiary education sector in Ghana.

Introduction

In 1963 three technical institutes in Takoradi, Kumasi and Accra were designated as polytechnics as part of wide-ranging reforms to the education sector during the postcolonial era to provide middle-level manpower development in Ghana. The then polytechnic institutions were not tertiary institutions. They operated as advanced secondary schools, which could be placed on the level 4 on International Standard Classification of Education, 2011.

In the early 1990s, the polytechnics were elevated to tertiary institutions as part of reforms to the tertiary education sector. The White Paper on the reforms to the Tertiary Education System (1990) provided that the nation would achieve a better balance between the supply of higher level and technician level personnel and that programmes and courses for advanced technician training would be introduced in appropriate tertiary institutions. Additionally, the White Paper stated that polytechnics had a distinctive role to play in middle level manpower development.

Programmes and courses were to be offered at the higher middle level of technician training leading to advanced practical training to complete the cycle of technical education and provide a capacity for higher level technician training and practical research (GOG, 1990). In this regard, polytechnics were elevated to tertiary institutions with the proclamation of the Polytechnic Law, 1992. Polytechnics were mandated to provide tertiary education in the field of manufacturing, commerce, science, technology, applied social science and applied arts. They were also to encourage study in technical subjects at tertiary level and provide opportunities for development, research and publication of research findings (GOG, 1990). The Polytechnic Law 1992 endowed polytechnics with the powers to award certificates and diplomas agreed upon by their Councils with the National Board for Technical and Professional Examinations Board and award degrees under conditions directed by the authority responsible for higher education.

In 2007, the Polytechnic Act, 2007 (Act 745) was enacted to enable polytechnics to award certificates and diplomas accredited by the National Accreditation Board and award degrees subject to conditions determined by their Councils.

Finally, in 2016, the Technical Universities Act was enacted to convert polytechnics into technical universities and empower them (Technical Universities) to award degrees; and offer Higher National Diploma programmes approved by the National Council for Tertiary Education, accredited by the National Accreditation Board, and examined and certified by the National Board for Professional and Technician Examinations to complete the evolution of Polytechnic institutions in Ghana (GOG, 2016).

Statement of the Problem

Since the establishment of polytechnics, staff and students had agitated for changes in the sector often making the universities their point of reference. The changes the staff and students agitated for concerned conditions of service of staff, placement of students in the public sector and other challenges that impinged on teaching and learning. Consequently, staff and students embarked upon agitations to back demands for changes in conditions of service and better placement in the public service respectively. Other issues raised by stakeholders

concerned mission fulfillment in polytechnic/technical universities including the profile of staff and students recruited to polytechnics/ technical universities, and the acquisition of resources for the organisation of advanced professional, technical and vocational education.

During the reorganisation of the tertiary education system in the early 1990s, it was determined that Ghana would have a dual tertiary education system comprising polytechnics and universities. Polytechnics were expected to provide facilities for professional and advanced vocational and technical education to meet the training aspirations of a developing economy. However, agitations by staff and students of polytechnics arising basically from incessant comparison of polytechnics with the universities coupled with actions and inactions of the management of polytechnics as well as regulatory weakness led to the dissimulation of the mandate of polytechnics now turned into technical universities. These challenges have apparently led to mission-drift in polytechnic/technical universities and loss of diversity and differentiation in tertiary education with concomitant effects on the supply of technically competent labour.

The Goal

The goal of this work is to examine the issues that prompted the changes in polytechnic education since they were established in 1963. Our intention is to examine the critical issues in polytechnic education at every stage of the evolution of polytechnics to Technical Universities; assess the factors that impinged on the execution of the mandate of polytechnics since their establishment and make recommendations to prevent mission-drift in Technical Universities.

The work involves qualitative analyses of the challenges and the factors behind the changes in polytechnic education since their establishment in 1963. It involves the analyses of policy documents, reports, press releases and pronouncements of the leadership of staff and students of polytechnic institutions. Discussions were held to collect the viewpoints of six Rectors/Vice-Chancellors and three senior managers of polytechnics on the subject matter. The work benefitted from the author's observation of the activities of the National Council for Tertiary Education in the polytechnic sector over a decade.

Conceptual and Theoretical Overview

Technical and Vocational Education refers to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (UNESCO, 1987).

Technical education refers to the academic and vocational preparation of students for jobs involving applied science and modern technology. It emphasizes the understanding and practical application of basic principles of science and mathematics, rather than the mere attainment of proficiency in manual skills which is properly the concern of vocational education (see www.britannica.com/topic/technical-education).

Polytechnics are tertiary education institutions that provide facilities for teaching and learning in a range of technical and vocational disciplines. The polytechnics are to encourage study in technical subjects at the tertiary level and provide tertiary education through full-time courses in the field of manufacturing, commerce, science, technology, applied social sciences, and applied arts (MOE, 1990).

Technical universities or universities of technology focus on the study of application of technology to the various fields of human endeavour. Technology in this regard refers to "... the know-how and creative processes that may assist people to utilise tools, resources and systems to solve problems and enhance control over the natural and made environment in an endeavour to improve the human condition" (UNESCO, 1985, quoted by Du Pre, 2010, p.10).Technical universities are different from traditional/classical universities in that they (technical universities) focus on vocational, technical and professional education and applied research, and thus, concentrate on the application of technology to the fields of learning (Du Pre, 2010, Afeti *et al.*, 2013).

Mission Drift Tertiary Education

Tertiary education institutions are established with clear expectations of their role in the education sector. Thus, if institutions assume other functions, which substantially affect the execution of their original

mandate, the institution is said to have drifted from its mission. Longanecker (2008) states that higher education values a hierarchy of institutions and this entices an institution to wish to expand or redefine its mission to move up the hierarchy. In assessing the phenomenon of mission drift in higher education in the United States, Longanecker (2008) stated that "we see increasing pressure behind mission creep – community colleges seeking to become baccalaureate colleges, baccalaureate colleges seeking to become universities, modest universities seeking to become significant research universities, and research universities seeking to become world class"(p.3). Consequently, the basic premise of mission drift is that institutions that are on the lower strata of hierarchy of institutions in higher education seek to appropriate the functions and identity associated with the prestigious institutional types. Gonzales (2013) notes that faculty members are deeply involved in the drift of institutions. Indeed, faculty seek to remake less research focussed and hence less prestigious places into the elite research institutions where they have been trained (Gonzales, 2013).

The consequence of mission drift is the loss of focus on the original mandate of tertiary institutions — often institutions jettisoning the mandate of providing vocational and technical education in favour of programmes of less practical nature. Longanecker (2003) notes that mission drift leads to the loss of teaching productivity; loss of focus on providing vocational education, loss of diversity in higher education and high cost of providing higher education.

Main Findings

Polytechnics as Upper Secondary Schools — Pre-1990s Polytechnic Education

The rationale for elevating the three technical institutes to polytechnics in 1963 was to create avenues for progression for students who had completed pre-technical courses and train a corps of technicians with advanced skills. Thus, students who had successfully completed the pre-technical course in technical institutions proceeded to non-tertiary polytechnics to either pursue General Course Examination in Engineering or Building, or to the Advanced City and Guilds of London

Institute Craft courses in mechanical, electrical or building (Kofi *et al*., 1990).

Polytechnics also offered full-time courses to successful general course students leading to the Ordinary Diploma in Mechanical and Electrical Engineering. Later on, courses leading to the Mechanical Technician Certificate with production or plant maintenance option, Electrical Engineering Technician Certificate or Construction Certificate were added. Full-Time Courses in Institutional Management and Business studies with secretarial and accounting options were also added (Kofi *et al*., 1990).

During the 1970s, polytechnics concentrated on technician programmes and offered advanced craft courses on part-time basis. Courses at polytechnics ranged from pure and applied science, statistics, mechanical, electrical and electronic engineering, building construction, business studies and professional courses in accounting, banking, secretaryship and catering (Kofi *et al*., 1990)**.**

Issues in the Pre-1990s Polytechnic Education

Polytechnics for a long time remained second cycle institutions and operated under the supervision of the Ghana Education Service. There was a pervasive notion that polytechnic education provided an opportunity for students who failed to gain admission into sixth form. Levels of the courses offered were not up to tertiary standard. In fact, polytechnics offered craft courses and lower technician programmes only — ordinary diplomas and intermediate qualifications of some professional bodies (Ministry of Education, 1990).

The then polytechnics faced several challenges. Sutherland-Addy *et al*. (1987) stated that the decision of the government of the day to upgrade the polytechnics, though sounded well, was sudden and not supported by the needed resources such as staff, equipment and relevant curricular. Courses and programmes offered by the polytechnics lacked broad training in the areas of science, technology and computations. English language was also not emphasised as a course. Levels of qualification and competencies of staff were generally low; and facilities were not adequate for running post-secondary level courses. Additionally, there was inadequate system of examinations. Apart from Institutional Management in Catering, Secretarial, and Business courses,

which were examined by the Technical Education Division of the GES, the City and Guilds of London Institute assessed most of the courses offered by the polytechnics externally (Honyenuga, 2013).

The effect of this was that, instead of learning to solve Ghana's, and for that matter Africa's, socio-economic problems, the curricula were tailored to address British socio-economic issues (Honyenuga, 2013).

Polytechnics as Non-University Tertiary Institutions

In the early 1990s, the polytechnics were elevated to tertiary institutions as part of reforms to the tertiary education sector. The White Paper on the reforms to the Tertiary Education System, 1990, provided that the nation intended achieving a better balance between the supply of higher level and technician level personnel. Programmes and courses for advanced technician training would be introduced in appropriate tertiary institutions.

The White Paper further stated that polytechnics had a distinctive role to play in middle level manpower development. Programmes and courses were to be offered at the higher middle level of technician training leading to advanced practical training to complete the cycle of technical education and provide a capacity for higher level technician training and practical research (GOG, 1990). In this regard, polytechnics were elevated to tertiary institutions with the proclamation of the Polytechnic Law 1992 to enable polytechnics provide tertiary education in the fields of manufacturing, commerce, science, technology, applied social science, applied arts, encourage study in technical subjects at tertiary level and provide opportunities for development, research and publication of research findings (GOG, 1990). The Polytechnic Law 1992 empowered polytechnics to award certificates and diplomas agreed upon by their Council with the National Board for Technical and Professional Examinations Board and award degrees under conditions directed by the authority responsible for higher education.

Issues in Post 1990 Polytechnic Education

Many issues confronted polytechnics after their elevation to tertiary status. Effah (2005) stated that polytechnics started with a number of

teething problems — inadequate preparation, weak leadership, blurred vision, crisis of identity, inadequate infrastructure to the extent that not many people and organisations wanted to identify with them. Alabi (2012) stated that the poor public perception of polytechnics as second-rate tertiary institutions, inadequate public funding, inadequate facilities, poor conditions of service for polytechnic staff, among others, all contributed to the challenges facing polytechnics.

Public image of TVET in Ghana was generally poor. Technical and vocational education was perceived as inferior to the purely academic type of education and reserved for the less academically endowed (Afeti and Mireku-Gyimah, 2003). Afeti (2002) also stated that the low public esteem of vocational and technical education and colonialist-inspired value system that unduly exalts the university degree as the ultimate academic attainment was responsible for the poor public perception of non-university tertiary institutions.

The philosophy and orientation of polytechnic education has often been confused with that of university education and misunderstood even by a section of the staff and students of the polytechnics themselves. As a result, the practical nature of polytechnic programmes has been obscured and unhelpful comparisons have been made regarding the comparative work of the graduates from the two systems of educational institutions (Afeti and Mireku-Gyimah, 2003).

Budu-Smith (2005) stated that instead of their complementary role to the universities, polytechnics appear to have lost focus of their important role in training high level technical human resources and seem to follow in the shadows of the universities by comparing their staff designations, operations and salary levels to those of the universities.

The labour market demand for polytechnic graduates appears to be weak (Afeti and Mireku-Gyimah, 2003). The NCTE (2001) noted that most polytechnic graduates have difficulty in getting jobs, obviously due to the lack of clarity on the part of employers about the capability of the HND holder in most cases, employers find difficulty in appropriately placing graduates of the polytechnics within the scheme of operations (NCTE, 2001). Boateng and Ofori-Sarpong (2002) indicated that employers in Ghana generally discriminate against the holders of polytechnic qualifications because of uncertainty about quality and hence placement on the job hierarchy. A survey by JICA indicated

that nearly 30% of polytechnic graduates are unable to find jobs on the domestic market. This apparent lack of career prospects for polytechnic graduates as well as the lack of clarity regarding prospects for further education of graduates of polytechnic institutions gained national attention and became topical in the early and mid-2000s. These issues culminated in student agitations with the demand for clearer pathway for their academic progression (Newman, 2013; Nyarko, 2011). According to Afeti (2002), the students embarked on a series of street demonstrations and a 10-week boycott of lectures to demand the creation of opportunities for them for further education or what they described as "academic progression" at the university level.

Poor conditions of staff made it impossible to recruit top management staff from industry (Afeti and Mireku-Gyimah, 2003). Nyarko (2011) notes that the issue of poor conditions of service has been a recurring battle cry for the staff of the polytechnics. The issue of poor remuneration has remained the Achilles heel of the polytechnic staff vis-à-vis their counterparts in analogous institutions.

Girdwoood (1999) states that resourcing levels in polytechnics were clearly inadequate. Indeed, Effah (2005) stated that when polytechnics were elevated to tertiary institutions, the minimum resource requirements necessary for their upgrading were not met. He stated further that under-resourcing was, without doubt, one of the major challenges facing polytechnic institutions. Government subvention for polytechnic institutions has over the years been lower than the assessed requirements for the training of students and that the situation is worsened by the fact that the cost of starting and running any TVET system is high. Levels of funding are inadequate to support effective and credible polytechnic education (Afeti and Mireku-Gyimah, 2003). The level of underfunding of polytechnics could be measured by the fact that costs were four times higher than the funding made available to polytechnics (Afeti and Mireku-Gyimah, 2003). Nyarko (2011) stated that the polytechnics were upgraded into tertiary institutions without the necessary funding and other resources. For example, Government expenditure per polytechnic student in 1990 was US$168 as compared to US$2100 per university student. This actually fell to US$74 per polytechnic student by 1998 during which time that of the University student fell to US$900. By 2005, the situation had improved to about

US$1000 per polytechnic student as against US$2500 per university student.

Polytechnic curricula have remained essentially the same in content and orientation for the past ten years. There is widespread perception that polytechnic training programmes are outdated and out of tune with the current demands of the labour market. The existing curricula is not industry-driven. They are heavily based on overseas (UK) models with little or no adaptation to reflect local conditions (Afeti and Mireku-Gyimah, 2003).

Nyarko (2011) stated that polytechnics faced serious staffing problems when they were upgraded from second cycle institutions to tertiary institutions. Inadequate qualified and professional staffing presented problems for teaching, learning and research. Polytechnics started with the few Ghana Education Service staff who opted to remain with the polytechnics at the time the polytechnics were upgraded to tertiary status (NCTE, 2001). The majority of the staff lacked the requisite levels of industrial or practical experience necessary for imparting relevant workplace knowledge and skills to students (Afeti and Mireku-Gyimah, 2003).

No effective dialogue or collaboration currently exists between the polytechnics and industry (Afeti and Mireku-Gyimah, 2003). No formal links have been established with industry for upgrading the skills of staff and arrangement in respect of part-time teaching (NCTE, 2001). Nyarko (2011) stated that the limited collaboration between polytechnics and industry in Ghana cannot be over-emphasized. Since industry is regarded as a major stakeholder in tertiary education around the globe, its views need to be taken into account in the design and review of the curricular. This would ensure that the programmes run by the institutions are more relevant to the needs of industry and society as a whole.

After their upgrading to tertiary status, polytechnics concentrated on HND programmes. Although practical training constitutes an important component of the formation of the polytechnic student, no formal agreement exists between the polytechnics and industry to promote the industrial component of the training including industrial attachment of students (NCTE, 2001).

Currently about 60% of all polytechnic students are enrolled in business-related disciplines with only a small percentage in science

and technology programmes. The teaching and assessment of hands-on practical skills are not adequately catered for in the polytechnic curriculum. Industrial attachment programmes for students are unstructured, ill supervised and are not considered a major assessable component of the accredited courses (Afeti and Mireku-Gyimah, 2003).

Polytechnics were elevated to tertiary status without adequate upgrading of their facilities, infrastructure and equipment. Indeed, NCTE (2002) stated that polytechnics inherited the physical and academic facilities of the Technical Institutes which were converted to polytechnics. Akyeampong *et al*. (1998) stated that the problems of infrastructure related to the lack of laboratories, libraries, workshops, classrooms, lecture theatres and staff offices. Facilities and tools for practical training were also obsolete, and there was a dearth of essential workshop and laboratory equipment as well as consumables for training (Afeti and Mireku-Gyimah, 2003). Kwame *et al*. (2001) indicated that since their upgrading in 1993, there had not been a commensurate expansion of facilities in most of the polytechnics to meet their roles. The inadequacy of academic facilities, no doubt, affected mission fulfillment in polytechnics. NCTE (1998) noted that since polytechnics were handicapped by not having laboratories or workshops, the students had to be sent to the then University of Science and Technology (UST) for their practicals at great cost to the polytechnics.

For instance, Ho Polytechnic sent students for two weeks each academic year for practicals at a cost of 6.8 million cedis. Students from Sunyani Polytechnic were sent to KNUST four to five times a year for three to five days of practicals each time at a cost of 5 million cedis. Similarly, Kumasi Polytechnic undertook practical training of its students at KNUST at the cost of 12 million cedis in 1996/97 academic year alone.

Actions of Stakeholders to Counter the Challenges Faced by Polytechnics

In the mid-90s to the 2000s, the Government of Ghana, the National Council for Tertiary Education, the leadership of polytechnic institutions and the staff and students of polytechnics initiated activities and projects to counter the challenges in polytechnic education.

The role of students in shaping the development of polytechnics/

technical universities relates to protests and agitations. Indeed, in 1997, more than 10,000 polytechnic students boycotted lectures for nearly two months demanding that the Higher National Diploma be equated to university first degree. Again, in 2002, the students embarked on a series of street demonstrations and a 10-week boycott of lectures to demand the creation of opportunities for them for further education or what they described as academic progression at the university level (Afeti, 2002). In 2004, students and staff of polytechnics embarked on various nation-wide strike actions and demonstrations to call for better job placement in the public service and improvement in conditions of service.

In 2004, grievances such as improvement in the conditions of service and mandate for negotiating new conditions of service led to agitations by staff. Apart from the agitations in 2004, teachers and administrative support staff of polytechnics intermittently embarked upon strike actions to agitate for improve conditions of service, often making the universities their point of reference (Newman 2013). In fact, some staff left to enjoy better conditions of service in other institutions. Achio (2012) stated that majority of staff sponsored to undertake further studies moved to other public universities to enjoy better conditions of service after completion of their programmes.

Various actions embarked upon by the Government of Ghana, particularly within the tertiary education landscape, provided the impetus in stemming the tide of agitations in the polytechnics. The Tertiary Education Project was instituted by the Government to support the tertiary institutions with equipment and various infrastructure development projects. In year 2000, the Ghana Education Trust Fund was established after agitations by students of tertiary institutions and the fund has contributed massively to infrastructure and staff development in tertiary education institutions including polytechnics. The Teaching and Learning Innovation Fund project was also initiated as competitive fund for tertiary education institutions to engender innovation in tertiary education institutions in the mid-2000s.

These innovations included curricula review, introduction of new programmes and establishment of laboratories and workshops. The Development of Skills for Industry project implemented by COTVET also helped in the development of infrastructure and the supply of equipment for selected polytechnics.

The introduction of the single spine salary structure has helped to bridge the gap in the salaries of staff of polytechnics and universities. Presently, the differences in the salaries of staff of universities and polytechnics are not substantial and this has led to the cessation in the almost annual ritual of staff of polytechnics embarking on industrial action to back their demand for improvement in their emoluments.

The leadership of polytechnics responded to the issues in polytechnic education by sponsoring changes in the legislation that governed polytechnic education and developed a new harmonized scheme of service that changed the designations of staff recommended by the National Council for Tertiary Education. In fact, the Polytechnic Act (2016) Act 745, which replaced the PNDC Law 321, had explicit provisions on autonomy of polytechnic institutions that covered the powers of polytechnics to award degrees.

Regarding staff designations, the Chief Lecturer of a polytechnic was re-designated as a Professor whilst a Principal Lecturer was also re-designated as an Associated Professor. There were the introduction of degree programmes and massive recruitment of students for business and accounting programmes. Indeed, whereas NCTE norms recommended a ratio of 60:40 for enrolment in science/engineering and humanities/business programmes, the actual enrolment in science/engineering and humanities/business programmes in Polytechnics was approximately 35:65.

Establishment of Technical Universities — Mandate, Principles and Powers

Girdwood (1999) stated that in many countries, polytechnics have lost their unique identity and become universities, offering their own degrees and research within their institutions. She advised that Ghana should avoid the temptation to follow this course, recognising that polytechnic leadership, staff and students may be strong advocates for such upgrading. In spite of this caution, the Technical Universities Act 2016 was passed by parliament to convert an initial six polytechnics into technical universities.

The main aim of Technical University is to provide higher education in engineering, science and technology-based disciplines, technical and vocational education and training, applied arts and related

disciplines in consultation with the National Council for Tertiary Education. Additionally, technical universities are expected to apply competency-based and practice-oriented approach in teaching, organisation and delivery of courses and develop strong linkages with industry and professional bodies (Government of Ghana, 2016).

In this regard, Technical Universities Act 2016 prescribed the disciplines for which technical universities could provide education and training. Technical universities have also been placed under rigorous regulatory oversight to prevent mission-drift. The Act proscribes technical universities from offering any programme apart from the afore-mentioned ones. Technical Universities are expected to consult the National Council for Tertiary Education in the mounting of degree programmes. Indeed, section 19(b) of Technical Universities Act 2016 provides that the Academic Boards of the Technical Universities are to devise and regulate courses of instruction and programmes of study, subject to the approval by the National Council for Tertiary Education and the National Accreditation Board. Higher National Diploma programmes of Technical Universities must be examined and certified by the National Board for Professional and Technician Examinations, approved by the National Council for Tertiary Education and accredited by the National Accreditation Board.

Discussion and Conclusion

The initial thrust for the establishment of polytechnic institutions was informed by the need to provide advanced technical education to foster national development and provide opportunities for graduates of junior technical schools to access advanced technical education. However, apart from the socio-economic rationale to provide advanced technical education to provide access to tertiary education and build human capital for national development, unrestrained comparison of polytechnic institutions with universities by internal stakeholders (teachers and administrators) had caused a drift of polytechnic institutions towards business, accounting and secretaryship programmes. This drift in programme offerings nearly caused polytechnics to jettison their mission of providing advanced technical and vocational education.

The changes that occurred in polytechnic education in the 1990s and the 2000s were mainly engendered by internal constituents with

the objective of securing the same recognition as public universities and the benefits thereof. The actors employed agitations, strikes, threats of strikes, demonstrations and facilitation of changes in enabling legislation of polytechnics and governance instruments to press demands for change. On the other hand, the drift in mission resulted from their attempt to maximise income through the recruitment of students for business programmes. Other factors that were germane to the desires of the internal constituents were weak regulatory oversight and a fortuitous national political environment.

In fact, weak regulatory oversight by the NCTE contributed immensely to mission drift in polytechnic education. The Council in the face of incessant mounting of business and secretariat programmes by the various polytechnics failed to call the institutions to order through drawing their attention to the application of the appropriate policy guidelines and regulations. The Council failed to apply its discretionary power in fund allocation in tertiary education to call the institutions to order through threat of withdrawal of funding or actually defunding the unrequired programmes. The Council also failed to direct the institutions as to the priority areas in tertiary education, thus, allowing the institutions to have a field day regarding the mounting of business/secretarial programmes. Even though the Council later introduced guidelines for mounting new programmes, it was too late to stem the tide in the mounting of non-vocational and technology-based programmes.

Unclear policy environment contributed to mission drift in polytechnic/technical universities. Effah (2004) stated that when the polytechnic institutions were elevated to tertiary status there was no clear management model for the institutions to adopt. Thus, in the face of uncertainty the institutions decided to adopt the practices of the dominant unit in the environment — universities. The NCTE, the regulatory body did not have clear policies to ensure that polytechnics operated as vocational and technical education institutions. Additionally, the fund allocation mechanism in tertiary education was not designed to incentivise the institutions for executing their mission. In this regard, the Council provided public funding to tertiary education regardless of the attempt by the polytechnics to dissimulate their mission; and this state of affairs led to attempts to change the mission of polytechnic and technical universities.

Before the elevation of polytechnics to technical universities no

study was conducted on the socio-economic contributions expected of Technical Universities. Even though the Afeti Committee provided the technical basis for the elevation of polytechnics to technical universities, no input and output analysis, capacity building requirements, priority programme areas and niche areas of technical universities were assessed.

The Technical Universities Act 2007 clearly defines the focal programme areas of technical universities to prevent mission drift. Indeed, the technical universities are expected to provide higher education in engineering, science and technology-based disciplines as well as technical, vocational and training and applied arts and science programmes. Additionally, technical universities are mandated to provide opportunities for technical and professional skills development and applied science. However, legislative provisions are not enough to guarantee that the institutions would stick to thier core mandate. Policies and effective mechanisms should be developed by regulatory bodies to bolster the institutions to execute their mandate.

The National Council for Tertiary Education need to develop mechanisms to fund Technical Universities on the basis of cost per student to foster the funding of students and programmes considered as national priority. In this regard, the NCTE should come up with national priority areas for which the institutions would be supported to develop new programmes. Thus, public funding would only be provided for programme areas that are vocational, technical and technological in nature.

Again, the National Council for Tertiary Education should come up with priority disciplinary areas for technical universities. Public funding should be applied to support the mandated and prioritized programme areas. Funding should be on the basis of unit cost to ensure that students pursuing programme areas that are not within the mandated and priority areas are not funded.

The conversion of polytechnics to technical universities should be complemented with clear policies and regulations to prevent the institutions from deviating from their original mandate of delivering advanced technical education and training.

National Council for Tertiary Education should continue and even strengthen its initial approval of programmes to ensure that new programmes are in the priority areas identified by the Council.

Additionally, the Council should engage stakeholders on the mandate and mission of the Technical Universities and based on these engagements, develop national policy on priority and niche areas for Technical Universities to prevent isomorphism and mission drift.

REFERENCES

Afeti, G. (2002). "Tertiary Education in Africa Today: Non-University Institutions", Accra, National Council for Tertiary Education, Vol. 2, No. 2.

Achio, S., (2012).Address by Rector of Accra Polytechnic, on the Occasion of the 11th Congregation, held on Friday, 23rd November, 2012 at the Polytechnic Congregation Ground.

Afeti, G. (2010). *Polytechnics Not Preschools for University Education.* Available: www. ghanabusinews.com

Afeti, G. (2003). Funding Proposal on Quality and Relevance of Programmes in Public Tertiary Institutions in Ghana.*National Council for Tertiary Education,* pp.1–11.

Alabi, J. (2012). Address by Council Chairman of Accra Polytechnic, on the Occasion of the11th Congregation, Held on Friday, 23rd November, 2012 at the Polytechnic Congregation Ground.

Akyeampong, D. A. (1998). "Evaluation of the Policy Objectives of the Reforms to the Tertiary Education System", Accra, National Council for Tertiary Education, pp. 62–73.

Boateng, K., and Ofori-Sarpong, E. (2002). *An Analytical Study of the Labour Market for Tertiary Graduates in Ghana.*A World Bank/National Council for Tertiary Education, National Accreditation Board Project. Accra.

COTVET (2009). Report on Technical and Vocational Education and Training, Council for Vocational and Technical Education.

Du Pre, R. (2010). "Universities of Technology in the Context of the South African Higher Education Landscape" in University of Technology — Deepening the Debate, Pretoria, Council for Tertiry Education .

Effah, P. (2004). *A Decade of Polytechnic Education in Ghana: An Assessment of Achievements and Failures.* Accra: National Council for Tertiary Education.

Girdwood, A. (1999). Tertiary Education Policy in Ghana, An Assessment: 1988–1998, the World Bank, pp. 54–56.

Gonzales, A. (2013). Faculty *Sensemaking and Mission Creep: Interrogating Institutionalised Ways of Knowing and Doing Legitimacy, the Review of Higher Education,* The Review of Higher Education Winter 2013, Volume 36, No. 2, pp. 179–209, Association for the Study of Higher Education.

Government of Ghana (1992). *Polytechnic Act.* Accra: Government of Ghana.

Government of Ghana (2007). *Polytechnic Act.* Accra: Government of Ghana.

Government of Ghana (1990). *White Paper on the Reforms to the Tertiary Education System.* Accra: Government of Ghana.

Government of Ghana (2004). *White Paper on the Report of the Education Review Committee.* Accra: Government of Ghana.

Government of Ghana (1994). *National Board for Professional and Technician Examinations Act.* Accra: Government of Ghana.

Honyenuga, B. Q. (2013). Polytechnic Education in Ghana: A Change Management Perspective. *International Journal of Social Science & Interdisciplinary Research,* 2(1), pp. 22–25.

Longanecker, D. A. (2008). *Mission Differentiation Verses Mission Creep: Higher Education's Battle Between Creationism and Evolution.* National Conference of State Legislatures and Western Insterstate Commission for Education.

Ministry of Education (1990). *Polytechnic Study, Upgrading Ghanaian Polytechnics to Tertiary Level.* Accra: Government of Ghana.

NCTE (2001). Report of the Technical Committee on Polytechnic Education, National Council for Tertiary Education.

Nyarko, D. A. (2011). *Polytechnic Education in Ghana: Challenges and Prospects.* Address by Rev. Prof. Daniel A. Nyarko (Rector, Takoradi Polytechnic) on the Occasion of the NABPTEX/Polytechnics Meeting Accra, 23rd March, 2011.

Newman, E. (2013). Evolution of Polytechnic Education in Ghana.*Journal of Educational Research in Africa* (5), 73–83.

Otoo, K., Gyamfi, D. and Agyemang, A. (2012). Branding Polytechnics in Ghana Market: A Case of Cape Coast Polytechnic. *Interdisciplinary Journal of Contemporary Research in Business*, 4(4), pp. 1–24

Public Services Commission (1997). *Report of the Adhoc Committee on Placement of HND Graduates in the Public and Civil Services.* Accra: Government of Ghana.

Sutherland-Addy, E., Abban, J. E., Okonjo, C. and Tackie, E. A. (1987). *University Rationalisation Study, Volume 1: Interim Report.* Accra: Ministry of Education and Culture. Available: https://www.britannica.com/topic/technical-education