

## **Total Quality Management in Nigerian Polytechnics in the 21st Century: Issues and Challenges\***

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### **ABSTRACT**

*In the recent times, there has been a remarked scarcity in the quality of academic staff, learning and teaching materials, in Nigerian Polytechnics. These factors are indication of defective management of Nigerian polytechnics. It is against this background that this paper examined a management tool - Total Quality Management (TQM). The paper concluded that TQM is an indispensable instrument for improved management of Nigerian polytechnics if properly implemented. The paper recommended that once TQM is employed, the polytechnic must be consistent with the principles.*

**Keywords:** *TQM, Nigerian Polytechnics, teaching materials, challenges*

### **INTRODUCTION**

The polytechnic is a post-secondary technical institution of higher learning created mainly to provide a wide range of intermediate and higher level technology and technologists. Okpeodua (2007) opines that the decision of the Federal Government to get up polytechnic education was predicated in the decision to revolutionize the society technologically. This government's decision copiously spelt out the objectives of Technical and Vocational Education (TVE) in the National Policy on Education (NPE, 2004). These objectives are (i) to provide trained manpower in applied sciences, technology, commerce and industry, and (ii) to provide technical knowledge and vocational skills necessary for agricultural, industrial, commercial and economic emancipation and development. Unfortunately, polytechnic in Nigeria have certain problems like misappropriation and misapplication of funds, poor inter-personal relationship, poor supervision and staffing, absence of team work, lack of effective control and co-ordination, poor planning, rigidity in approach to human problems, student unrest, examination malpractices, admission racketeering, strikes, downright stubbornness of some officials, etc. All these problems have affected the quality of products produced by the polytechnics in Nigeria.

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Over the years, mitigating these problems have become a major priority for Nigerian successive governments and the polytechnic themselves. As a way out, the federal government have set up many committees and put some measures in place to concretely deal with culprits. Some of these problems are Anti-corruption law of the federal republic of Nigeria 2000, Suspension, termination, dismissal rustication and expulsion; and Establishment of service compact with all Nigerian in 2004. Based on observation, experience and relevant literature, these measures are not effective because of bureaucracy involved in their application. The focal point of this study is to examine how effective TQM is in the management of Nigerian polytechnic and hence inevitably lead to improvement by eliminating the causes of these problems in the system.

The term total quality management according to Weihrich and Koontz (1998) involves the organisation's long-term commitment to the continuous improvement of quality throughout the organisation with the active participation of all members at all levels to meet and exceed customers' expectation. Greenwood and Gaunt (1994) define TQM as continuously satisfying customer's requirements at a minimum cost to company or school. It is a system where input enlarges the process and involves both the internal and external environment. The word total in this context consists of everyone in the organisation in creating and making the quality of the services and products offered. This includes customers, people (manager and staff) competitors and the environment. Quality is defined as the process itself. The organisation through individuals and group actions focuses on meeting customers' needs, recognizing that customer's perception identifies quality. This includes the planning and designing of services and products that take place. While management is the agent or mechanism of integrating among people, customers and competitors. It includes integrating leadership and empowerment in order to attain the best results.

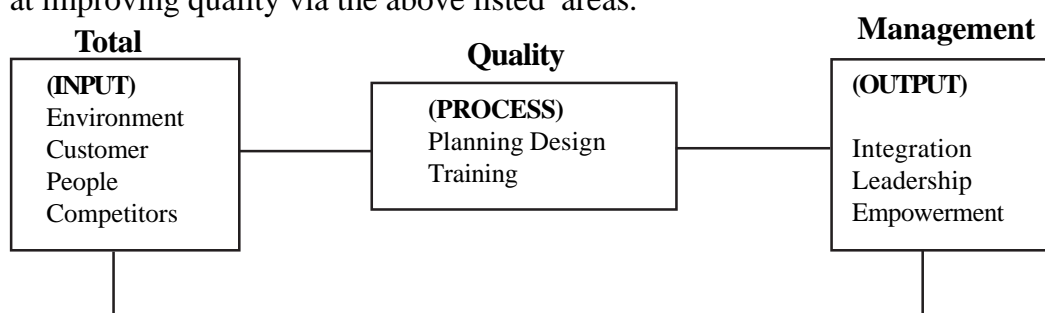
### **Quality Improvement and Development in Nigerian Polytechnics**

Technical and vocational education training as defined by the United Nations Educational Scientific and Cultural Organisation (UNESCO) and the International Labour Organisation (ILO) recommendations of 2001 is a comprehensive term referring to those aspects of the educational process involving in addition to general education, the study of technologies are related sciences and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (NPE, 2004). Nigeria has since come to this realization and has put in

place certain measures to ensure these moves. The measures include an enabling education policy whose guiding principle is to equip every citizen with such knowledge, skills, attitudes and values as to enable him/her derive maximum benefits from his/her membership in society, lead a fulfilling life and contribute to the development and welfare of the economy and the institutional structure. Precisely, the present 6-3-3-4 system of education in Nigeria gives remarkable attention to technical education and the polytechnic is one of the avenues through which government attempts to propagate technical and vocational education training. However, from one technical college in 1948 the country now has over 50 polytechnics (JAMB, 2010). In spite of this number, the social demands for polytechnic education in Nigeria have resulted in the rapid expansion of lower quality learning. The volume of resource inputs has not expanded to meet the admission demand despite the fact that admission into polytechnics have rapidly increased. The consequence is an acute shortage of staff, funds, physical facilities and equipment. The shortage of staff has been compounded by the harsh teaching environment, which is characterized by over stretched facilities and insufficient supply of teaching materials. Science and technological graduates have little or no exposure to practical application of skills because of out-dated and over utilized laboratory materials.

The issues which can enhance the quality of polytechnic education in Nigeria in the short and long run border on certain factors such as increase in public spending, time for learner, requisite tools and technology; performance standard, acquisition and use of inputs, and student's capacity and motivation to learn. Incidentally, "public spending" tops the list. At present, the amount of money Nigeria devotes to education is far lower than the 26% of government expenditure as recommended by UNESCO. This shows her poor commitment to the development of education and explains the progress that has been made in this sector since 1990. In respect of polytechnics, the situation is not encouraging due to poor funding and insufficient pedagogical resources. This situation has given rise to a poor quality of schooling at this level. The pursuit of quality of polytechnic education should not only be the concern of teacher and polytechnics, but also of the parents, the students, employers of labour, the government and the international community. Since each of these parties has its own view about what constitutes good polytechnic education, it has consequently been a difficult task to agree on what should be a good practice in our polytechnic. The problem is further compounded by the heterogeneous nature of Nigeria as a multi-ethnic country. What is considered a minimum entry qualification into the polytechnic across the country?. This may be due to the prevailing conditions within the community where the polytechnics are located.

Every polytechnic in Nigeria faces the challenge of improving quality of education. Some of these challenges include: (i) raising student achievement, (ii) respect for admission guidelines and quotas; (ii) improving the quality of teaching, (iv) dwindling national economy, (v) proper definition of technology education, and (vi) apathy towards technical education. Others are: (i) providing adequate resources and utilizing them effectively, (ii) providing learning experience which meets the requirements of all learners, (iii) ensuring that the curriculum and measurement methods are relevant are inclusive; (iv) enabling environment, (v) improving job performance; and (vi) ensuring that management and leadership of polytechnics in Nigeria are strong and effective. The management and leadership of various polytechnics should increase their efforts at improving quality via the above listed areas.



**Fig. 1:** The TQM System

*Source:* Greenwood, M. S. and Gaunt, H. A. (1994)

From the foregoing and for the purpose of this paper, TQM refers to an approach or management style that will enable an organisation to manage its materials, equipment, environment as well as information on a continuous basis to meet customers' needs at the lowest rate possible.

### Need For Total Quality Management (TQM)

TQM programme is intended to mitigate an organisation's problems and make sure that the organisation survives in an increasing competitive environment for continuous improvement and ensure satisfy customers. The needs for TQM are as follows:

1. **To increase profit:** The major aim of business organisation is to make profit. The philosophy of the TQM is to produce quality at zero defects and satisfy customers. When there is quality improvement in products and services, business processes and people; it results in more products at lower cost giving rise to increase in profit.

2. ***To motivate people:*** Organisation may embark on TQM programme in order to recognize and reward people. TQM involves everybody including the environment. Possible reinforcement, recognition and reward are important to maintain and sustain the attainment of TQM.
3. ***To meet customer's requirement:*** Organisation employs TQM with the intention to improve the quality of goods and services offered to customers. The centre of interest is the customer. Indeed, quality in the opinion of John (1992) is as fully satisfying agreed customer requirements at lowest internal price.
4. ***To become more increasing competitive:*** Organisation may employ TQM technique to enable it compete favourably within the industry. Competitive bench-marking is a continuous management process that assists firms examines their competitors and themselves, and employs that knowledge in shaping a practical plan to attain superiority in the market place.
5. ***To stop fire-fighting in crisis management:*** The reason for adopting TQM may be to dealing with immediate crises situation as they happen. Effective planning, control and implementation which are essential ingredients in TQM could eliminate crisis management.

### **The Application of Total Quality Management (TQM) in the Revitalization of Quality in a Nigerian Polytechnic**

TQM has been applied as a concept of change effort or transformation. Kumbar (2004) in Ugbomhe (2009) opines that TQM involves the question of whether products and services do correspond to customers' expectations and needs and whether both are convenient with each other. Historically, TQM can be traced to the ancient days. George (1972) argues that TQM was a tool applied in the management of Benin mud, Egyptian pyramid, Assyrian tall pillars, the Summanan strong houses of mud bricks and other merchant wonders of ancient times. These wonderful things were possible with the employment of TQM principles; participation of all team work, vision, commitment and feedback.

Towards the end of the medieval period and industrial revolution of the 19th century in Europe and other industrialized countries, the factory system that came up gave both to enormous quality production of individual piece of product from individual machine (Kemper, 1980). Applying the inaccurate system of inspection, the question that arises is: How often should inspection be carried out and the number to inspect. In some instances, every part was

inspected and which was called one hundred percent (100) percent inspection. When the inspection is less than 100%, it is referred to partial or sampling inspection. As a result, an American, Dr. Edward W. Deming came up with statistical process control (SPC) in the 1920s to assist in the control and inspection process (Greenwood and Gaunt, 1994). This implies that TQM philosophies were popularly associated with the work of Edward Deming in the late 1920s.

Dr. Edward W. Deming was born in 1902. He became a statistician and lecturer in 1939. With the assistance of Shewhart, a bell telephone company statistician in 1980s, he developed and emphasized the importance of statistical process control, and displayed the use of SPC both in servicing and manufactory industries. Statistical Process Control (SPC) is a statistically controlled management process which provides managers with a means of determining when to intervene in an industrial process and when to disengage it alive. Flowing from the above and in line with the importance attached to Deming's statistical process control, he was invited to teach statistical process control to engineers and industrialists with very beneficial effects on the war effort. That is, managers in government own establishments realized that his method could be taught to engineers and workers and it was then quickly implemented by over-burden war production plants (Ugbomhe, 2009). Americans abandoned Deming's statistical process control whose desire was to flood the markets with goods (Greenwood and Gaunt, 1994).

In 1950, the Japanese invited Deming to deliver a lecture to the Union in an effort to reconstruct and rehabilitate their war devastated economy. The Japanese accepted wholeheartedly Deming's philosophies and by 1978, the Japanese had dominated the world market economically. In other words, there was commitment and dedication to quality and productivity in the Japan industrial and service sectors which assisted Japan to become a fundamental force in the global economy in the 1980s. Based on the success of Deming's philosophies in Japan, W. E. Conway of Nashun, an American industrialist invited Deming to consult for Nashun. Then, Americans employed statistical control introduced by Deming on both public and private sectors to replace traditional management methods that dominated American companies before the emergence of Deming's philosophies.

For example, TQM has been employed by former president Ronald Reagan of United States of America who described October, 1988, as "National Quality Month", and President George Bush of USA who said "reasserting our leadership will require a firm commitment to total quality management and principle to the public sector" (Swiss, 1992). Some of the large companies such as Ford, IMB, General Motors and Coca-cola participated in the National



Quality Forum (Wehrich and Kontz, 1998). Today, giant firms all over the world such as Motorola (USA), IMB (UK), Ford, Honeywell, British Rail and Gas, General Motors (USA), etc. have embraced and employed TQM (Greenwood and Gaunt, 1994). As stated earlier, employing TQM in Nigerian Polytechnics would change attitude of stakeholders in a positive way to revoke the poor standard. Management techniques for determining and documenting quality of the processes, services and products include the following as identified by Jaffar (1998) in Ugbomhe (2009), control charts, cause and effect diagram, run charts, histogram, and scattered diagram. Quality leaders use the above named tools to meet present and future needs of customers.

***The Elements of Total Quality Management (TQM):*** Some major elements of TQM that can be identified based on the American Society of Quality Control include

- 1 Policy, planning and administration.
- 2 Product design and design change control.
- 3 Control purchased materials.
- 4 Production quality control.
- 5 User contact and field performance.
- 6 Corrective action and
- 7 Employee selection training and motivation.

Arising from the above, organisations need to create an environment that emphasizes improvement of products and services over short time financial goals. In other words, if the above elements are stuck to different aspects of business, worker relationship would become healthier and ultimately profitable.

## **THE PRINCIPLES OF TOTAL QUALITY MANAGEMENT (TQM)**

The guiding principles of TQM are summarized as follows:

- i ***Management Lead:*** Management refers to decision makers. TQM implies that management lead both in words and in action. TQM is an organizational change agent. To meet long-term commitment to customers, TQM must change organizational behaviour and culture in a positive way. To attain success, management must carry everybody (employees, suppliers, shareholders, the public and the community) along.
- ii ***Customer Focus:*** Customers are the kings. One of the major principles of TQM is customers' satisfaction. Quality is determined by customers (internal and external) satisfaction. Understanding and fulfilling the

customers' needs is the only way through which the vision to TQM can attain success. Decision on the action of what to produce, how to produce, when to produce and at what price and the vision statement are based on the whims and caprices of the customers.

- iii ***Empowerment and Team Work:*** An organizational success is a function of motivation, commitment and team work. Success of employees depends largely on having opportunities to learn and practice new skills or methods. This can be realized through team work and empowerment. Customers are increasingly satisfied without fear and with no departmental obstacles if workers are given the chances to be part of decision-making process. In other words, it calls for participative management which is a kind of involvement of all members of an organisation in the management process, thus ignoring the traditional top-down management methods. It enhances management's grasp of operation and motivate workers who begin to feel happier and healthier in the organisation.
- iv ***Continuous Process Improvement:*** It is a comprehensive system approach that an organisation adopts to improve its performance on systematic and continuous basis. TQM involves enhancement of all the values and practices. Quality is dynamic and not static. It improves on a continuous basis as customer's expectations rise so must the quality product. Continuous process improvement also involves the recognition or small increase in the gains towards goals of the quality.
- v ***Preventing Variability not Detection:*** TQM philosophies required to prevent rework scrap and waste. The emphasis of TQM is that what is to be done must be done right at the first time. According to Greenwood and Gaunt, (1994), rework can be prevented with clear instructions and care in preparation and well maintain system.

### **Steps in Employing Total Quality Management (TQM) in The Nigerian Polytechnics**

- 1 ***Vision And Vision Statement:*** Management includes governments, political leaders, and shareholders, proprietors, governing boards, rectors and principal officers of the polytechnics. They have the responsibility to lead and formulate a clear quality vision by reviewing the current situation and make a quality vision or mission statement. The vision statement must be made known to everybody by the management. The



vision statement rolls out the goals and objective of the polytechnic. All patterns of planning, leading, controlling and organizing must be derived from the vision statement. The statement must be subjected to renewal as times passes, as the prophetic experiences expansion and as the management witness changes. For example, the mission statement could be to produce the best graduates (products to meet the challenges of the 21st century).

- 2 **Management Commitment:** As stated earlier, continual improvement requires that management must be commitment in words and in actions. Management must come up with a strategic (medium-to-long-term) plan on how to attain an objective and goals. Lines, Marcourse and Martin (1999) opined that strategy includes financial, production and personnel resources required. Strategy must synchronize with vision for the successful implementation of TQM (Akerele, 2000). Hence, the education vision statement can only be attained if management identifies and knockout or get rid of the root cause of problems and come up with potential solutions.
- 3 **Identification of Customers and other Expectations:** Quality must always be defined from the customer perspective. Polytechnic customers are divided into two - external and internal. The internal customers are schools and departments with the same polytechnic that utilizes the educational services of other school and departments, while the external customers include government, parents, shareholders, employers of labour, business organizations, philanthropists and other polytechnics which are paying for the use of education services provided by the Nigerian polytechnic products. These customers required to be satisfied with the educational services provided by the polytechnic graduates.

From the foregoing, it is imperative to identify what the customers actually required, the type of educational services they need, and otherwise, the polytechnic will indulge in the habit of producing what would not meet the expectation of the customers. The expectation of customers is complex and numerous based on observation, experience and literature. However, survey through questionnaire administered on customers can be employed in identifying customer's expectations.

SWOT analysis is an objective approach to get the customers' expectations to see strength, weakness, opportunities and threats. The management should select a reasonable and well supported benchmark which is an important element in attaining world class manufacturing

(Lines, Marcourse and Martin, 1999). The bench mark may include the number of students to admit and graduate from each school and department per year, school fees, school prospectus, research and research grants, staff condition of service, student - staff ratio, academic programmes and information technology system.

- 4 ***Compare the Demand of the Customers Needs with Internal Capability of the Polytechnic to Discover Gap:*** After identifying the expectation of customers, there is therefore the need to compare and contrast them with the available resources of the polytechnic. There will be demand for more staff, laboratories, finance, and other infrastructure once changes in expectation are identified in customers. When expectations are compared with the available resources, it will enable the polytechnic to get correct information about the gaps and make necessary and adequate arrangement to fill the gaps.
- 5 ***Implementation of TQM For Continuous Improvement:*** Step 1 - 3 seek to identify the problem and possible solutions. The next step is to put action into effect. According to Deming (1982), Joseph Jablonski in Abrahamson (1996) cited by Ugbohmhe (2009) from other empirical applications of TQM, what makes TQM successful is the team work. Lines, Marcourse and Martins (1999) have asserted that team work takes place when production is arranged into large units of work instead of a high division of labour. The teams needed must be representative of both the internal and external environment of the customers. The external environment includes key employers of labour, philanthropists, external examiners and other polytechnics and contractors, while management, students, bursary staff, academic and non-academic staff, and internal examines made up the internal environment. Major and minor teams are generated from the internal and external environments. The current tall organizational structure which is characterized by bureaucratic deficiencies in Nigerian polytechnics will be stamped out while flat and a quality-based organizational structure characterized by bottom-up features will be brought in. There will be organizational climate where members will be innovative, creative, trusted and empowered. The teams will be cross functional to meet the expectations of customers for continuous improvement without hindrance.
- 6 ***Feedback:*** For purpose of continuous improvement, results of the teams must be checked and monitored. The teams must access their work via collection of data in order to discover any drawback or obstacle

detrimental to the implementation of TQM in the polytechnic system. Polytechnic should find out if there was any deviation between predetermined and real results, statement of problems must be written for further identification and selecting of vision and making vision statement.

### CONCLUSION AND RECOMMENDATIONS

Nigerian polytechnics are not meeting customer's expectations. They are ill-equipped. Government policies are continuously inconsistent. There is no element of continuity "New government, new policies" is the technical order of the day in Nigeria. Bureaucratic bottlenecks, poor attitudes of students towards learning, low quality teaching due to lack of training and retraining of teachers, and among others are some of the problems facing polytechnics in Nigeria. It is against this back drop that this study made an attempt to examine a managerial style. TQM that would assist to "revoke" poor standard in Nigerian polytechnics to enable them meet challenges of the 21st century.

The paper recommends that Nigerian polytechnics should employ and be consistent with the principles of TQM. External environment of Nigerian includes French speaking countries. That is, Nigeria is subsumed by francophone countries. This implies that the external environment of Nigeria constitutes part of external environment of Nigerian polytechnics. Polytechnics also have internal environment. A relationship therefore exists between external and internal forces due to open system in which polytechnic operates. TQM emphasizes that external and inferred forces can be interrelated. In this case, teaching of French language in all the academic departments in polytechnic must be introduced by the government to make Nigerian polytechnics' products acceptable to other French speaking West African countries and beyond.

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