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Empirical Evaluation of Total Quality Management as a Strategic Tool for Gaining Competitive Advantage in Manufacturing Companies in Nigeria

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Abstract

This study focused on Empirical Evaluation of Total Quality Management as a strategic tool for gaining competitive advantage in manufacturing companies in Nigeria. The study covered five manufacturing companies. Purposive sampling method was employed to draw a total sample of 92 respondents, distributed among the five companies as follows: Company A–22; Company B–20; Company C–18; Company D–18; and Company E–14. Likert Format Structured questionnaire was employed to elicit information from the respondents. Out of the 92 questionnaire issued, 86 were properly filled and returned and upon which the analyses were based. The indices that measure successful implementation of TQM in organizations which include absence of defectiveness in products/services; elimination of wastes in all organizational resources; ensuring that organization's processes are simple and devoid of complexities or tortuousness; ensuring that qualified and competent employees are engaged and retained over time in the organization; and ensuring that work environment is perfectly conducive and congenial to the workforce for maximum contribution were the variables of interest studied. These variables were all confirmed by the study as useful agents for attracting competitive advantage to organizations. The study, therefore, concludes that TQM is a powerful and strong strategic tool for gaining competitive advantage by organizations. The study recommends as follows: that organizational or institutional leaders/managers should embrace and institute TQM in their respective organizations with particular focus on (a) ensuring that employees are properly motivated through adequate remuneration, continuous training and provision of conducive environment for optimum performance; (b) ensuring elimination of wastes in the use of all organizational resources; (c) ensuring that products/services are without defectiveness as a guarantee for customers to have full value/utility for pathing with their hard earned money in patronage for organizations goods/services.

Introduction

Total Quality Management (TQM) is a management philosophy that seeks to ensure high level quality in all aspects of operations and processes in the organization, leading to production of high quality goods and services for the satisfaction of customers' needs and as a means to organization's growth and sustainability. It is a way of managing in which everyone in the organization is committed to continuous improvement of his or her part of the total operation. The main thrust of the concept is costs reduction. Deming (2000), opines that organizations that focus on improving quality would automatically reduce costs while those that focus on reducing cost would automatically reduce quality and actually increase cost as a result.

TQM is a business management concept designed to ensure that quality is not only expressed in the products of an organization but also that all organizational processes, functions and activities are immersed in it. It is concerned with "quality", which requires every employee involvement or participation. Its main thrust is cost-reduction and sustainability of the firm through long-term success engendered by effective customer service resulting in customer loyalty and satisfaction. It involves determined and considered effort to continually seek to find out and to understand the needs and desires of customers and how best to satisfy them. It also involves engaging and retaining qualified and competent employees to man different functions in the organization and subsequently ensuring their proper treatment by way of adequate and commensurate remuneration through effective job design that will guarantee job satisfaction; employees' involvement in decision making process which will give them sense of belonging and commitment to desired change.

The Concept of Quality

According to Reeves and Bednar (1994), a search for the definition of quality has yielded inconsistent results. The two researchers emphasize that regardless of the time period or context in which quality is examined, the concept has had multiple and often muddled definitions and has been used to describe a wide variety of phenomena. This observation is evident in the literatures. In fact, from the opinion of different quality professionals in the literature, quality could be defined from three different perspectives: customer-based, value-based, and service/manufacturing-based.

Customer-based perspective:

Edwards, M. O. (1968) defines quality based on its capacity to satisfy wants. Gilmore (1974) sees the concept as the degree to which a specific product satisfies the wants of a specific customer. Juran (1988) simply defines the concept as "fitness to use." Kuehn & Day (1962), opine that in the final analysis and as it relates to the marketplace, the quality of a product depends on how well it fits patterns of consumer preferences. For Oakland [1989], the essence of total quality approach is to identify and meet the requirements of both internal and external customers.

Service/Manufacturing-based:

Feigenbaum (1983) opines that quality is the degree to which a specific product conforms to a design or specification.[8] Cosby (1979), defines quality as simply conformance to requirements. For Price (1985), it simply means "to do it right first time".

Value-based:

Broh (1982), opines that quality is the degree of excellence at an acceptable price and the control of variability at an acceptable cost. Newell and Dale (1991), are rather concerned about how and where quality must be achieved. They argue that quality must be achieved in five basic areas: people, equipment, methods, materials and the environment to ensure customer's need are met. Kanji (1990) defines both quality and TQM in the following manner: quality means to satisfy customers' requirements continually; while TQM is to achieve quality at low cost by involving everyone's daily commitment. A particular definition of quality that is said to be transcendental-based is one by Pirsig, R. M. (1974) wherein he asserts that "quality is neither mind nor matter, but a third entity independent of the two, even though quality cannot be defined, you know what it is."

QualityDigest.com (2022) sees the definitions of quality as relational. She explains that quality is the ongoing process of building and sustaining relationships by assessing, anticipating, and fulfilling stated and implied needs. She went further to argue that even those quality definitions which are not expressly relational have an implicit relational character. She queries and correspondingly answered the following questions: why do we try to do the right thing right, on time, every time? The answer she gave is: to build and sustain relationships. Why do we seek zero defects and conformance to requirements? To build and sustain relationships. Why do we seek to structure

features or characteristics of a product or service that bear on their ability to satisfy stated and implied needs? To build and sustain relationships. The focus of continuous improvement is, likewise, the building and sustaining of relationships. Arguably, it would be difficult to find a realistic definition of quality that does not have implicit in it a fundamental express or implied focus of building and sustaining relationships. From the definitions of quality as enunciated above, it is not difficult to appreciate and accept the relational position, giving the fact that evident in those definitions basically focuses on how to please and retain the customers.

Amendu, D. A. (2022) asserts that in the final analysis, quality speaks of authenticity, high standard, integrity and value not just in organizations or products and services but in every aspect of human life.[15] The need for quality as a fundamental component in the formulation of strategies for institutions to implement Total Quality Management is clearly outlined by Bilich and Neto (2010) who state that quality, as a macro or strategic function of institutions, must be present in the day-to-day running of an institution, in aspects such as establishment of policies, the decision process, selection of personnel, allocation of resources, definition of priorities and service delivery to satisfy customer requirements. [16]

The Concept of Total Quality Management

Cole, Bacdayan and White (1993), refer to TQM broadly as an integrative management approach to customer satisfaction through a wide variety of techniques and tools, meant to achieve high quality goods and services. Daft (2003) corroborates that the concept focuses on managing the total organization to deliver quality to customers. He also identified four significant elements that characterize TQM to include employee involvement, benchmarking, continuous improvement and focus on customer satisfaction. *Employee involvement* requires that it is the business of every employee, irrespective of their job description or schedule to ensure that quality products and services are produced and delivered. *Benchmarking* encourages employees to understand the operations of other companies in the industry and to find ways of improving and exceeding the industry standard; *continuous improvement* insists that no matter how efficient the present production processes are, they could still be improved upon for more efficiency and effectiveness, and all of these are directed towards ensuring customer satisfaction, namely, that they get the required and expected utility from the products for which they spent their money and that they are treated with courtesy and respect as the "kings."

Amedu (2022) opines that TQM involves organization-wide cultural commit-ment to satisfying customers through the use of an integrated system of tools, techniques and training. It is geared towards increasing the production of better products and services at progressively more competitive prices. It involves the continuous improvement of organizational processes, resulting in high-products and services. It is thus primarily a change in an organization's technology, its way of doing work. In the human services, this means the way clients are processed, the service delivery methods applied to them and the ancillary organizational processes such as paperwork, procurement processes, and other procedures. It is also a change in an organization's culture, its norms, values, and belief systems about how organizations function. In addition, it is a change in an organization's political system, decision making processes and power bases.

Chaudron (2018) agrees that TQM involves change in organization's culture, norms, values and belief systems but he argues that for a substantive change to occur in a given organization, it must occur concurrently within three dimensions that must be aligned, one to the other. Those dimensions include technological, cultural and political. He insists that any change that is exclusive to any of the dimensions will not be successful.

Essentially, a good system of TQM directs the efforts of an entire firm towards higher customer satisfaction, continuous improvement, and employee involvement. Many quality management principles are therefore, expressed in terms of changing individuals' attitudes and the organization culture. This is why Lawal (2016) believes that Total Quality Management is 90 percent attitude, especially the attitude of listening to customers and delivery of quality goods and services to them. Total Quality Management is a strategic function; it is a preventive measure tool; it is a proactive approach to ensuring that things are done right at the first instance; it also involves a great deal of common sense, leadership and ability to generate and analyse data for effective and sound decision-making for problem-solving. It is equally intended to promote and empower every member of the

organization; to encourage sustained and continuous training of employees for improved quality productivity and to eliminate employees' fear for change. Its basic principle is that the cost of prevention is less than the cost of correction. Bellis-Jones and Hand, (1999) concludes that total quality management is not just another management fad; it is capable of delivering real competitive advantage.

The Principles of Total Quality Management

Deming, W is acknowledged as the father of Total Quality Management. In order to achieve total quality in organizations, Deming developed 14 principles that drive and make the concept of TQM practicable and fruitful in organizations.

According to him: in Ogbu (2022), the first principle is to ***"Create and communicate to all employees a statement of the aims and purposes of the company".*** The first step in the process of achieving TQ (total quality) in organization is to get all the employees acquainted right from the outset with the company aims and purposes. Of course a business organization that is out for all round quality in all her operations should have QUALITY as one of its central aims and purposes. This knowledge of the objectives of the organization gives direction to the individual performance of the employees.

The second is to ***"Adapt to the new philosophy of the day: industries and economics are always changing"*** – organizations should be aware of changes in the economy and industries in which they belong and be prepared to change with trend of things accordingly. This involves constant scanning of the environment for feedbacks; and studying the processes in similar industries for the purpose of benchmarking.

Third, ***"Build quality into a product throughout production"*** **–** this principle calls for establishment of quality standards that should be monitored for compliance at each stage of the production process, not only to guarantee excellent quality products but also to prevent defective products emerging from the production line at all. This procedure opts for and guarantees zero tolerance for poor quality outputs.

Fourth, ***"End the practice of awarding business on the basis of price tag alone; instead, try a long-term relationship based on established loyalty and trust":*** This principle discourages purchase of input materials merely because they are cheap. Quality products are nearly always a function of superior and quality input materials. Managers should endeavour to source input materials from "established loyalty and trust" irrespective of cost.

Fifth, ***"Work to constantly improve quality and productivity"*** - this principle presupposes that no matter how qualitative a particular product, process, technological devices, etcetera might be, under proper examination and study, there can still be room for improvement for added value. Ogbu (2020), observes that the American computer printer giant, Hewlett Packard adds value to its printers on a very regular basis. For example, HP LaserJet III Printer series which was introduced into the market in March 1990 underwent improvement for five good times within exactly one year leading to: HP LaserJet III; HP LaserJet IIID; HP LaserJet IIIp; and HP LaserJet IIISi, which came up in March 1991. In fact, the company that began production in 1984 have had more than 112 different printers with different facilities and enhancements to her credits. That is continuous improvement at work!

Sixth, ***"Institute on-the-job training"*** **–** new ideas, new processes, and better ways to ensure quality products or services delivery always emerge. Knowledgeable employees who are team players and would be able to adapt into new work processes and new work environments at the shortest possible time are *sine quo non* to quality operations. Management or organization's leadership should be prepared to make adequate budget provisions for training and development of the employees in order to attain total quality.

Seventh, ***"Teach and institute leadership to improve all job functions"*** – Managers should provide leadership training for all employees, not only for the improvement of all job functions, but also for employees' growth and development in leadership knowledge and skills.

Eighth, ***create trust, drive out fear*****:** Fear is the cause of all mischievous, corner-cutting and sharp practices in an organization. Fears of denials of legitimate entitlements, of suppression, or intimidation, of lack of development opportunities, etc, are responsible for employees trying to cut-corners and subvert the rules for efficiency and effectiveness in organizations. Managers should

create trust by carrying every employee along and motivating them appropriately.

Ninth principle of the concept is to *"**Avoid intradepartmental conflicts**"* - Conflicts are enemies to cooperation and team spirit that are central to united effort to achieve quality production. Often conflicts arise as a result of incongruence of organization-wide objectives and those of the departments. Managers should strive to reduce to the barest minimum or eliminate entirely intradepartmental conflicts, and this is realisable only when the departmental objectives derive from the organization-wide objectives.

Tenth principle is to, ***"Eliminate exhortations for the Workforce"*** – this principle advises managers to avoid micromanaging human capital in the organization. The idea of always persuading or nagging at the workforce to perform their functions denies them that self-worth, self-direction and initiative; and the corresponding feeling of fulfilment for achieved results. In fact, oftentimes employees construe such exhortation as coercion, so they try to put up passive resistance and to frustrate the system. Managers should instead focus on the system and morale, (that is to ensure that the system is functional; and that great performance of the employees are acknowledged and rewarded to build their morale for greater performance in future.). Deming listed three items as constituting the eleventh principle of TQM and these include ***"(a) Eliminate work standard quotas for production. Substitute leadership methods for improvement. (b) Eliminate MBO. Avoid numerical goals. Alternatively, learn the capabilities of processes and how to improve them".*** In this, Deming recommends that Frederick Taylor's scientific management quota production and piece-rate payment system are detrimental to quality excellence and should be jettisoned. It may not be difficult to understand his position. Employees working under quota system are very likely to be more concerned to meet their quota to earn the wages attached and in the process ignore altogether the quality aspect of their products. This is evident in bricklaying business in Nigeria. If bricklayers are hired on what is termed *"daily pay"* they take time to ensure quality alignment and erection of blocks because no matter how little the number of blocks laid in a day, the agreed daily wage is guaranteed; but hire them on the basis of what is termed *"counting"* in which the wage payable is dependent on the number of blocks laid, then one will see a mad rush to get more blocks erected in a day with the corresponding slipshod, haphazard and misaligned erection that will result in a most ugly and very poor quality production.

Furthermore, Deming recommends substitution of leadership methods for improvement: the leadership style associated with quota system of production is task-centred and therefore insensitive to the feeling and welfare of the employees; a leadership approach that is appropriate for quality performance should be people-centred such as rewards, recognition, and appreciation of employee performance, and freedom to take initiative. Management by Objectives otherwise known as MBO is a management philosophy that calls for participative goal-setting in which the organizational objectives are set and cascaded down to the work units. Deming did not give reasons for his recommendation to eliminate MBO as one of the conditions for attainment of quality operations in the workplace but his reason should be obvious: quality pursuit is a continuous, unending journey rather than the achievement of a fixed goal which is the target of MBO. Quality attainment is concerned with processes: sequence of interdependent activities (based on allocation of organizational resources such as employee time, energy, machines/technologies, raw materials and money) linked together to achieve a given goal (produce goods or services). The point is that managers are to be more concerned about studying and understanding these work processes, systems and skills, and how to continuously improve on them as condition precedent for quality performance or operations in organizations.

Deming in his twelfth principle demands from managers to ***"Remove barriers that rob people of pride of workmanship":*** This principle advocates for employees to enjoy the honour resulting from the application of their ingenuity and experience to workmanship. Organizations should guarantee this and they do so by acknowledgement, appreciation and rewards, in definite and concrete terms, the outstanding performance of employees. They could give monetary incentive, oral commendation, award of certificate of excellence, and even promotion. Managers who hog for themselves the glory and honour due an employee for his achievement is a disservice to the organization and a barrier to achieving total quality in the outfit. The thirteenth and fourteenth principles are ***"Educate with self-improvement***

programs" and ***"Include everyone in the company to accomplish the transformation".*** What these two principles advocate is first, provide opportunities for the employees to add value to themselves through further training in many other areas and that Total Quality should be a business of everyone in the organization, irrespective of the functions performed by the employee.

A cursory observation of the TQM principles enunciated above reveals that it is a corporate culture of continuous improvements of organizational products or services and processes; improvement of corporate members through continuous training and learning; dedicated attention to customers' need and relations; continuous improvement in the operational procedures or methods to ensure smooth and seamless delivery of quality goods and services to the consuming public (customers).

Total Quality Management Strategies in an Organization

Amedu (2022) posits that four components frequently cited as critical to a successful TQM strategy are customer satisfaction, employee involvement, managerial leadership, and process improvement and control. Marketing theory has long recognized the importance of customer satisfaction to the business organization. Quality-focused organizations must identify their customers (both internal and external), determine the specific needs of these customers, integrate all activities of the organization (including marketing, production, finance, HRM, and Information System (IS)) to satisfy the identified needs of these customers, and finally, follow up to ensure the customers were actually satisfied accordingly. The cost of quality is considered to be the primary tool for measuring quality. In the approach, it is used to track the effectiveness of the TQM process, select quality improvement projects, and provide cost justification to doubters. By bringing together these easily assembled costs of review, inspection, testing, scrap, and rework, one can convince management and others of the need for quality improvement. Cost of quality has received increasing attention in recent years. It is effective in its intended purpose of raising awareness about quality and communicating to management the benefits of TQM in terms of dollars. Quality creates not only a price/value advantage over competitors but also enables the firm to charge a higher per unit sale price through differentiation.

Firms competing on quality pursue an operational strategy that controls quality of the product or service and seeks continuous improvement as a means of gaining competitive advantage.

Challenges in the Implementation of Total Quality Management

Amedu, D. A. (2022) states that companies are constantly moving ahead towards improving the quality of overall activities so as to prosper and serve the market in a better way. However, he identified six items that constitute serious challenges that are capable of halting the purpose of quality management. These include:

i. *Constraints imposed by Quality Culture***:** Change, it is said, is constant, yet human nature somehow is resistant to change. The lack of genuine quality culture poses threats in terms of resistance to change as the operators/employees may averse to the new techniques introduced by TQM that makes a variation in its present style of working.
ii. *Autocratic style of Leadership***:** If autocratic style of leadership is adopted by the top management, it creates an environment of fear. Employees may deviously frustrate management efforts if they perceive that they are micro-managed and not allowed to take initiative. Employees under autocratic leadership, in all cases, are likely to offer their best and that in turns adversely affects their productivity and quality level.
iii. *Lack of Employee Commitment:* Employee commitment, nearly always, is a function of Management treatment of the workforce. If they are properly treated and given a sense of belonging, Management could secure their commitment, otherwise, since employees are directly related with the production process they could render the whole process of quality management useless.
iv. *Improper Channel of Communication***:** Communication is the only instrument by which the intended vision and plans of the organization are made available to the operators (workforce). In order, therefore, to secure a good result of TQM, it is necessary that all the information flow in the organization is free and accessible to the right persons at the right time and in the right manner. Loopholes in the

communication channel act as a barrier in achieving quality results.

v. *Quality Certifications-viewed as Bureaucratic Exercise***:** Bureaucracy is a theory of Management that advocates for rigorous formal and ordered process in getting any piece of job done and is suitable for attaining quality production. Though it is argued that bureaucracy delays performance, many companies rely on bureaucratic practices to be able to get quality certification that enables them to conform to the client requirements or contractual obligations and getting competitive edge in the market.

vi. *Problems in identifying customer needs:* Companies often fail in identifying the needs of customers, may be, because of inaccurate data, improper survey, and wrong interpretation of facts, etcetera. This may result in supply of unwanted products to the customers and hence defeat the main objective of TQM, which is customer satisfaction

Furthermore, to determine critical factors of total quality management, various studies have been carried out and different instruments were developed by individual researchers and institutions such as Malcolm Baldrige Award, EFQM (European Founda-tion for Quality Management), and the Deming Prize Criteria. Based on these studies, a wide range of management issue, techniques, approaches, and systematic empirical investigation have been generated and can be accessed by interested organization willing to introduce TQM into its operations.

Competitive Advantage

Firms in the same industry represent those that offer similar goods and services, each of which, has the same capacity and the same utility to absolutely satisfy the same needs of different customers. Such firms are said to be competitors as they compete for the patronage of same set of customers. The extent to which each of the firms is able to have a market share and to grow same to greater heights more than those of the competitors requires that managers must be strategically up and doing in ensuring that their workforce are not only knowledgeable, experienced and innovative, but also properly motivated to elicit their highest commitment and dedication, which consequently lead to high level quality performance outcome.

Laskowski and Lebeaux, (2022) opine that competitive advantage is the favorable position an organization seeks in order to be more profitable than its rivals. They further explain that to gain and maintain a competitive advantage, an organization must be able to demonstrate a greater comparative or differential value than its competitors and convey that information to its desired target market.

Lewis, (2019) proposes four different ways to gain competitive advantage in the marketplace which he identified to include: cost leadership, differentiation, defensive strategies, and strategic alliances. *Cost leadership* occurs when an organization is able to offer the same quality product as its competitors at a lower price. This strategy is achieved through discovering ways to produce goods or services at a lower cost compared to those of the competitors. It could be through improved production methods and processes, utilization of resources more efficiently or by acquiring better technological devices peculiar to her productive activities.

Differentiation strategy occurs when companies seek to differentiate her products or services by discovering and adding certain characteristics or attributes that appeal to customers that are absent in those of their competitors. Such attributes may include clean environment, polite and courteous attention to customers (differentiated customer service) aesthetic design of packages.

Defensive strategy involves maintaining gained competitive advantage and ensuring that whatever secret that was responsible for gaining the advantage is secured and protected so they do not get to the wrong hands of the competitors. This could come about by ensuring that knowledge workforce in the organization are retained by ensuring adequate remuneration and other incentives.

Strategic Alliances – "competitive advantages can also be gained by businesses that seek **strategic alliance**s with other businesses in related industries or within the same industry. Businesses in same industry could work together in terms of sharing resources or combining to acquire raw materials cheaper by bulk purchase. There is a difference between strategic collusion and strategic alliance. Collusion occurs when businesses within the same industry work together to artificially control prices. Strategic alliances, on the other hand, are more along the lines of joint ventures that businesses use to pool resources and gain themselves exposure at the expense of other competitors not in the alliance.

Statement of the Problem

At the beginning of Industrial Revolution in the 19th Century, firms, are basically interested and concerned with churning out large quantities of products from their factory production lines and were less concerned about the "quality" of those products and the extent to which the products offered to the consuming public (organizational customers) actually provide or satisfy the expected promised utilities for which the customers were willing and ready to path with their hard earned money. Firms then, were also not much interested in the welfare of the workforce – there was child labour and almost unbearable hour of work per day with the accompanying poor wages. Then the concern of the firm was essentially maximization of profit at the expense of the employees and customers. It is unfortunate that many modern manufacturing companies are still guilty of such problems.

There is also the problem of firms having to produce products that are defective and have no immediate demand by customers. This occasions excessive stock and long occupation of warehouses coupled with the attendant cost of managing the stock; firms also suffer substantial financial losses in terms of having to recall defective products and reworking on them, which may eventually not be acceptable to customers.

With time, however, government came up with agencies to regulate the unfair practices of those industries in order to protect the consuming public. In Nigeria, for example, such agencies as Standard Organization of Nigeria is primarily concerned with ensuring that products offered to the consuming public meet some certain quality standards before they are moved to the market; Consumer Protection Agency, on the other hand, is concerned with ensuring that consumers' right to quality products that satisfy the utility promised by the products is guaranteed or protected. Yet, in spite of those measures by government, many companies, in the contemporary world are still, unfortunately guilty of churning out defective and poor quality products and poor treatment of the human capital (workforce in the organization).

The problem on the ground, therefore, is that to the best of the knowledge of this researcher, there is no known study or information based on TQM which is focused on measuring its impact on gaining competitive advantage in a manufacturing company in Nigeria. The only study on the subject was the one that concerns the extent to which the concept impacts on organizational performance. It is, therefore, in view of this that the researcher was motivated to fill-in this knowledge gap on the effect of Total Quality Management as a strategy for gaining competitive advantage in Nigeria Manufacturing environment.

Objective of the Study

The one and the only objective of this study is to find out the extent to which Total Quality Management contributes to the gaining of competitive advantage among competing firms in some manufacturing organizations in Nigeria.

Research Questions

The following research questions shall guide the study:

(i) To what extent do you agree that each of the following items is indicative of Total Quality Management availability in an organization?
   a) Ensuring that products/services of a firm are free from defectiveness
   b) Ensuring that wastes are eliminated in the use of all organizational resources
   c) Ensuring that all organization's processes are simple and direct, devoid of any complexities or tortuousness
   d) Ensuring that qualified and competent employees are engaged and retained over time in an organization
   e) Ensuring that the work environment is perfectly conducive and congenial to the workforce for maximum contribution.

(ii) To what extent does your company measure up to the above indications of TQM availability in an organization?

(iii) To what extent do you think that TQM has contributed to increased market share in your company?

(iv) To what extent do you think that TQM has contributed to increased profitability in your company?

(v) To what extent do you think that TQM has contributed to increased efficiency and productivity in your company?

Research Hypothesis

We posit the following research hypothesis:

Ho There is no significant evidence that Total Quality Management is a tool for gaining competitive advantage in manufacturing companies in Nigeria.

Ha There is significant evidence that Total Quality Management is a tool for gaining competitive advantage in manufacturing companies in Nigeria.

Research Procedure

The research design for this study is a survey. Instrument for data collection was Likert Format structured questionnaire assigned the following response pattern Strongly Agree, Agree, Disagree and Strongly Disagree by which information was elicited from the respondents representing 86 staff from the five manufacturing companies used in this study. A total of 92 sample population were drawn from the five companies, using purposive sampling method. The samples were distributed among the five companies thus: Company A–22; Company B–20; Company C–18; Company D–18; and Company D–14.

Data Analysis

For purpose of empirical analyses and hypotheses testing, the Likert data were transformed into two distinct populations with *Strongly Agree* and *Agree* as representing Population sample 1 (those who are of the opinion that TQM significantly contributes to gaining competitive advantage in the companies studied and *Disagree* and *Strongly Disagree* representing Population sample 2 (those who believe that TQM does not signify-cantly contribute to the gaining of competitive advantage in the companies of interest).

Data analysis technique adopted for testing the hypotheses is Mann-Whitney U Test Statistic given as $\boldsymbol{U} = n_1 n_2 + \frac{n1(n1+1)}{2} = R1$,

where, n1 is the population 1 (those respondents that Strongly Agree/Agree) and

n2 is the population 2 (those that Disagree/Strongly Disagree respectively.

The Likert Scale was limited to four options for this purpose comparing the two population responses. We shall test whether the distributions of the two population samples are equal or not under 95% Confidence Interval, that is, alpha (α) =0.05.

Decision Rule: If the calculated U is equal to or less than the critical or table value at 0.05 alpha level, we shall reject Ha and accept Ho that TQM does not contribute significantly to gaining competitive advantage by companies, otherwise, we shall reject Ho and accept Ho that TQM significantly contribute to the gaining of competitive advantage by companies in the form of the variables of interests.

1.	To what extent do you agree or disagree that each of the following items is indicative of Total Quality Management availability in an organization?	**Strongly agree**	**Agree**	**Strongly Disagree**	**Disagree**	**Total**
	a) Ensuring that products/services of a firm are free from defectiveness	**43**	**24**	**9**	**10**	**86**
	b) Ensuring that wastes are eliminated in the use of all organizational resources.	**38**	**36**	**7**	**5**	**86**
	c) Ensuring that all organization's processes are simple and direct, devoid of any complexities or tortuousness	**30**	**31**	**12**	**13**	**86**
	d) Ensuring that qualified and competent employees are engaged and retained over time in an organization,	**35**	**24**	**14**	**13**	**86**
	e) Ensuring that the work environment is perfect and conducive to elicit maximum contribution from the workforce.	**51**	**23**	**6**	**6**	**86**
	Total for item 1 (a,b,c,d,e)	**197**	**138**	**48**	**47**	
2.	To what extent does your company measure up to the above indications of TQM?	**49**	**30**	**4**	**3**	**86**
3.	To what extent do you think that TQM has contributed to increased market share in your company given items 1 (a, b. c. d, and e)?	**28**	**42**	**10**	**6**	**86**
4.	To what extent do you think that TQM has contributed to increased profitability in your company given items 1 (a, b. c. d, and e)?	**34**	**25**	**13**	**14**	**86**

From the above table, it is shown that the 86 responses are distributed for item 1(a, b,c,d, and e)as follows: (a) 43, 24, 9, and 10; for item 1(b), 38, 36, 7, and 5; for item 1(c), 30, 31, 12, and 13; for item 1(d), 35, 24, 14 and 13; for item 1(e), 51, 23, 6, 6 chose Strongly Agree, Agree, Strongly Disagree, and Disagree respectively. It could be observed also that in the table under items 2 to 4, the responses were as follows: 49, 30, 4, and 3; 28, 42, 10, and 6; 34, 25, 13 and 14 respectively for each of the variables of interest.

From the above descriptive statistics, it is evident that majority opinion of the respondents favour the fact that each of the variables is indicative of competitive advantage for each of the three companies studied.

We shall, as earlier indicated, test the hypotheses, using Mann-Whitney U test statistic, the result of which would be compared with that of the descriptive statistics above to determine if there is any difference or not.

Computation of Mann-Whitney U Test Statistics

We compare the responses for the two population samples by pairing them thus:

Strongly Agree/Agree %	335	79	70	59
Strongly Disagree/Disagree %	95	7	16	27

The data are combined, arranged and ranked as below:

Sample 1	0	0	0	0	59	70	79	335
Sample 2	7	16	27	95	0	0	0	0
Ranking	**1**	**2**	**3**	**4**	**[5]**	**[6]**	**[7]**	**[8]**

We compute the ranking thus: Ranks (R_1 and $R_{2)}$:

$R_1 = 1+2+3+4 = 10$

$R_2 = 5+6+7+8 = 26$

The Mann-Whitney U Statistics for both ranks is computed thus:

$$U_1 = n_1n_2 + h\frac{n1(n1+1)}{2} - R1 = 4x4 + \frac{4\,x\,5}{2} - 10 = 16 + \frac{(20)}{2} - 10 = 16 + 10 = 26 - 10 = \mathbf{16}.$$

$$U_1 = n_1n_2 + h\frac{n1(n1+1)}{2} - R2 = 4x4 + \frac{4\,x\,5}{2} - 26 = 16 + \frac{(20)}{2} - 26 = 16 + 10 = 26 - 26 = \mathbf{0}.$$

Decision: We make reference to our decision rule above. The calculated U is the less of the U_1 and U_2. Therefore, the U Test value is **0** which is less than the table value of **0.1714** at 0.05 alpha level with $n_1 = 4$ and $n_2 = 4$. In view of this result, we therefore, reject the null hypothesis and accept the alternate hypothesis that Total Quality Management is a tool for gaining competitive advantage in Manufacturing Companies in Nigeria.

Discussions

As already pointed out, the instrument for data collection was a structured, Likert Format questionnaire containing six items which were distributed to 92 respondents that formed the sample population of the study. Out of this number, 86 of them properly filled and returned the questionnaires which were subsequently used for the analyses of data. The outcome of the analyses, namely, the descriptive statistics and the corresponding testing of hypotheses show sufficient evidence that TQM is a strategic tool for gaining competitive advantage.

In spite of the confirmation by this study that TQM is a strategic tool for gaining competitive advantage, the researcher wishes to observe that the human element in the organization is critical to the efficacy of Total Quality Management concept. It is important to note that quality processes, quality technologies, quality input materials and quality environment which TQM seeks to achieve within an organization may not, in themselves, do the magic of turning the firm around to be ahead of others in the industry. What actually does the magic and makes the gains of Total Quality Management evident in the life of an organization is the workforce, the life blood of the organization, without whom the rest of organizational resources are inert and useless. Thus, managers or organizations desiring to institute Total Quality Management must take the issue of the workforce serious, in terms of their proper management and motivation. In fact, keen observation of the principles of the concept as enunciated earlier reveals that most of them are centred on education, development, training and motivation and careful handling of the greatest assets of the organization, its employees and members.

It is, therefore, understandable why Watson, T. J. in Bateman and Snell (1999) rightly observed that "you can get capital and erect buildings, but it takes people to build a business". Corroborating this assertion by Watson, Armstrong (2004) defines Strategic Human Resource Management as a strategic and coherent approach to the management of an organization's most valued assets: the people working there who individually and collectively contribute to the achievement of its objectives" (emphasis mine).

In view of the overriding importance of HUMAN RESOURCE in organizations, practitioners, namely, organizational managers and leaders, who have the position power to manage and allocate organizational resources, need to isolate the human resource (the workforce) from the rest of the organizational resources and give them special treatment as without them, the rest of the resources are moribund and useless. Thus, the issue of management of human resources of an organization requires special and internalized knowledge of the different motivational theories and the skill to apply them accordingly to achieve the desired competitive advantage hidden in Total Quality Management.

Conclusions

The study has proved beyond all reasonable doubts that Total Quality Management is a trigger to the indices/variables that make competitive advantage possible. Therefore, TQM as a result is a

tool for gaining competitive advantage in manufacturing companies or any other type of companies in Nigeria. This is confirmed by the data analyses: the descriptive statistics have overwhelming responses from the respondents in favour of the study variables. The hypotheses testing empirically confirms the descriptive statistics. As earlier pointed, the difference between calculated value and the critical value of Mann-Whitney U-statistics has more than significantly demonstrated that each of the variables associated with TQM are triggers to competitive advantage, and therefore, TQM is a strategic tool for gaining competitive advantage.

Recommendations:

The study, therefore, strongly recommends as follows: that organizational or institutional leaders and managers should embrace and institute TQM in their respective organizations with particular focus on:

(a) ensuring that employees are properly motivated through adequate remuneration, continuous training and provision of conducive environment for optimum performance;

(b) elimination of wastes in the use of organizational resources;

(c) ensuring that products/services are without defectiveness as a guarantee for customers to have full value/utility for pathing with their hard earned money in patronage for organizations goods/services.

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