

**EVALUATION OF TOTAL QUALITY MANAGEMENT PRACTICES ON
ORGANIZATIONAL PERFORMANCE OF WIRE AND CABLES
MANUFACTURING INDUSTRIES IN ONDO STATE, NIGERIA.**

Abstract

This research focused on evaluation of total quality management on organizational performance of wire and cable manufacturing industries in Ondo State. A case study of Denki wire and cable Nigeria limited, Akure , Ondo State. The issue of poor quality of products is a major problem in the wire and cable manufacturing industries in Nigeria which can be averted by genuine quality management for enhancing products quality. The purpose of the study was to evaluate extent to which the principles of total quality management are implemented and impact of total quality management principles on organization performance.. A descriptive survey research design was adopted for the study. The study relied on primary data which was generated through the administration of a structured questionnaire. The population of the study comprised of forty-five (45) respondents from Denki wire and cable Nigeria limited, Akure. The entire population was used for the study, hence, sampling was not employed. The instrument was validated by three experts and a reliability of 0.86 was obtained using mean and standard deviation in answering the two research questions. The hypotheses were also tested using t-test at 0.05 level of significance. The result of the study shows that implementation of total quality management practices play an important role in enhancing organizational performance. In light of these findings, the following recommended were made: all the total quality management principles must be implemented in order to achieve organization goal and target, organization should see total quality

management principle as a continuous project which should not be ignored and management should engage in frequent training of employee in order to foster its quality attainment.

Keywords: *Electricity, Wire and Cable, Total quality management, organizational performance, Quality, Competition, Denki wire and cable Nigeria limited Akure,*

Introduction

Nowadays due to the advancement in technology, almost everything is powered by electricity. Electricity is used for cooking, cooling, heating, lighting and refrigeration as well as to power electrical appliances such as, computers, televisions electric motor, electric vehicles and electronics. Be it indoor or outdoor, we need supply of smooth, uninterrupted electricity, which can easily pass through high quality, standard and suitable wires and cables. Even, the passage of electricity from the generation station to transmission lines and to where it will be needed by the consumers is possible by electrical wires and cables.

Electrical wire and cable are two major conducting materials which allow easy flow of electric current. According to Gupta, 2015, wire and cable are considered as the same conducting materials in house wiring. He further explained that single wire, may be bare or covered with insulation is called wire and several wires stranded together is known as cable. Wire is any conductor which is uniform in diameter and circular in cross section and cable is a length of a single insulated conductor solid or stranded (Dhokal and Dhokal, 2016). Electrical wire and cable are indispensable in electrical/ electronic industries. Whenever, there is electricity, wire and cable must be available..

. Electrical wire and cable manufacturing industries in Nigeria especially Denki wire and cables, Akure plays significant role in power generation, transmission and distribution of electricity which necessitated the need to identify the quality model for enhancing standard and

sustain quality and to produce right quality products, affordable, competitive and readily available wires and cables across the length and breadth of the Nigeria.

Quality according to Sharma (2014), is the fitness for the purpose at lowest cost. He further stated that quality of any product or service is regarded as the degree to which it fulfills the requirements of the customer. The demand for quality services by customers is one of the most crucial areas that wire and cable manufacturing industries need to pay more attention in order to survive competition.

According to Joekes and Evans, (2008), competition is the process of trying to win something that is a higher success level in a business enterprise or industry which someone else is also trying to win or achieve. Beato and Laffont, (2002) define competition as the rivalry or individual effort of two or more parties acting independently. Competitiveness is a complex concept that expresses a firm's ability to survive in the conditions of competition, by proving products and services that meet high quality standards at competitive prices, both nationally and internationally. Competition is inevitable in almost every business environment.

Sheikholeslam and Emamian (2015) posit that the key to survive in this competitive world of business is to find best ways to be wanted by creating a competitive edge. Moreover, Soltani and Lai, (2007) said that, to survive and succeed in the business environment, competitive pressure has forced some organizations to adopt quality management systems. One of such quality management system is Total Quality Management (TQM).

Total Quality Management (TQM) is a strategy to actualize better and continuous improvement of quality of the products of an organization. Oakland (1993) as cited in Adza (2012) defines total quality management as a strategic management tool that can be used for improving the competitiveness, effectiveness and flexibility of the whole organization. In a total

quality management, the word quality has a wider meaning; it means quality of output of every department and by every employee, cleanliness, orderliness, punctuality, customer service, standardization of works and continuous efforts for improvement (Sharma, 2011). Muthama (2014) defines total quality management as a holistic management philosophy that empowers every member of the organization to strive for continuous improvement in all the functions of an organization to provide superior customer value and meet customer needs in terms of quality.

The Chartered Quality Institute also defines total quality management as organizational management philosophy which enables it to meet stakeholder needs and expectations efficiently and effectively, without compromising ethical values. Total quality management involves effective decision making, problem solving and integration of quality planning, quality implementation and quality improvement strategies of all the department of an organization, and other satisfied suppliers, highly committed and involved employees, lower costs, higher income and higher profits for the organization (Sharma, 2014). He stated further that effective total quality management results in greater customer satisfaction, fewer defects, less waste, reduced cost, improved profitability and increased productivity. Talib (2013) explains that the main focus of total quality management philosophy is to achieve a comprehensive integration among organizational staff and their functions in order to gain better enhancement, progress and preservation of products and services quality to achieve customer satisfaction. Total quality management is a combined effort of both top level management as well as employees of an organization to formulate effective strategies and policies to deliver high quality products which not only meet but also exceed customer satisfaction. According to Faris, 2018 total quality management is a key driver of organizational performance in public and private organizations.

Organizational performance reveals how well an organization achieves its objectives in terms of quality of offerings, operations, innovation, employees' satisfaction, customers' satisfaction, sales, profitability and aggregate organization's vision and mission. Rula(2017) averred that organizational performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives). He stated further that organizational performance involves the recurring activities to establish organizational goal, monitor progress toward the goals, and make adjustments to achieve those goals more effectively and efficiently.

According to Chung and Lo (2007), organizational performance is the outcome of the actions or activities, which members of organizations carried out to measure how well an organization has accomplished its objectives. Therefore, organizational performance is the ability of the organization to achieve its goals and objectives. Organizational performance mostly focused on the capability and ability of an organization to efficiently utilize the available resources to achieve accomplishments consistent with the set objectives of the company, as well as considering their relevance to its users (Peterson and Gijsbers, 2003). Cherrington (1989) in Boru and Chen, 2020 defined organizational performance as a concept of success or effectiveness of an organization, and as an indication of the organizational manner that it is performing effectively to achieve its objectives effectively. According to Richard et al. (2009) organizational performance encompasses three specific areas of firm outcomes :financial performance (profits, return on assets, return on investment, etc.), product market performance (sales, market share, etc.) and shareholder return (total shareholder return, economic value added, etc.). Organization performance through total quality management can enhance quality and productivity of wire and cable manufacturing industries especially Denki wire and cables (Nigeria) limited.

Denki wire and cable manufacturing company produced and distribute various electric wires and cables such as single core copper(1.0mm² single core,1.5mm² single core,2.5mm² single core, 4.0mm² single core (solid & stranded),6.0mm² single core (solid & stranded),10.0mm² single core (stranded),16.0mm² single core,25.0mm² single core,35.0mm² single core and above) ,multicore flat cable (double core flat(DCF) - 1.0 - 2.5mm²,three core flat (TCF) 1.0 -2.5mm²,double core flat + earth - 1.0 - 2.5mm² and service cable (ACI - 6.0 - 16.0mm²) for power transmission, distribution, wiring of residential/ industrial buildings and related structures. The products are based on the established and approved specifications by the Standards Organization of Nigeria (SON). If a company such as Denki wire and cables (Nigeria) Limited, wishes to prosper and sustain quality, every employee must work for continuous quality improvement in order to enhance organizational performance and productivity.

. The total number of employees as at May, 2023 at Denki wire and cable Nigeria limited, Akure is 45. The company has six(6) departments: Accounting/ store (7), Administrative(15), Marketing(4),Maintenance(6), Production (12) and Quality control (3) which are managed by qualified managers and engineers endowed with rich experience, and geared up for company future growth. In order to enhance the organizational performance of the company, the management has placed different policies and procedures into practice of quality.

Statement of the study

Denki wire and cable Nigeria limited is one of the major wire and cable manufacturing company in Ondo state. In the past, it was observed that, this company suffers from low patronage due to infiltrate of market with fake and cheap wires and cables Having quality products that can meet the needs of customers is a major problem in the wire and cable manufacturing company. Considering the fact that cables products are important component of

building, any slight breach and skip in the quality control process may result to fire incidence that can destroy lives and properties. In order to sustain quality and standard of products, It is therefore imperative to evaluate total quality management practices on organizational performance at Denki wire and cables Nigeria Limited, Akure.

Purpose of the study

The major purpose of the study is to evaluate total quality management on organizational performance of wire and cable manufacturing industries in Ondo state. Specifically, the study will set out to determine the:

1. Extent to which the principles of total quality management are implemented at wire and cable manufacturing industries in Ondo state.
2. Impact of total quality management principles on organizational performance at wire and cable manufacturing industries in Ondo state.

Research Questions

The following research questions will be formulated to guide the study:

1. To what extent do the principles of total quality management implemented at wire and cable manufacturing industries in Ondo state?
2. What is the impact of total quality management implementation on organizational performance at wire and cable manufacturing industries in Ondo state. ?

Research Hypotheses

The following null hypotheses will be tested at 0.05 level of significance:

H0₁: There is no significant difference between the mean response of management staff and junior staff on the extent the principles of total quality management are implemented at Denki wire and cable Nigeria limited.

H0₂: There is no significant different between the mean responses of management staff and junior staff onthe impact of total quality management implementation on organizational performance at Denki wire and cable Nigeria limited.

Methodology

The design for this study is descriptive survey design. Descriptive survey design, according to Olaitan, Ali, Eyo and Sowande (2002), is the plan, structure and strategy that the investigator wants to adopt in order to obtain solution to research problems using questionnaire in collecting, analyzing and interpreting the data.Descriptive survey design was found appropriate for this study because data were collected using structured questionnaire. The study was carried out at Denki wire and cable Nigeria limited which is located in Akure, Ondo State of Nigeria..

The population for the study consisted of all 45 staff which is grouped according to their respective departments

Table 1.List of Departments and population

Department	Population
Administrative	13
Account/store	7
Maintenance	6
Marketing	4
Production	12

Quality control	3
Total	45

Source: Denki Wire and cable Nigeria Limited, Akure, 2023

. The entire population was used for the study, hence, sampling was not employed..

The instrument for data collection was a structured questionnaire developed by the researcher, known as Total Quality Management on Organizational Performance Questionnaire (TQMOPQ) . The questionnaire was divided into three sections. Section A elicit personal information about the respondents, Section B contains fourteen (14) items which focused on extent of implementation of total quality management on organizational performance and Section C has eleven (11) items which centered on the impact of total quality management practices on organizational performance at Denki wire and cable Nigeria limited, Akure, Ondo state. Both sections were treated on a five-point scale ranging from Strongly Agreed (SA), Agreed (A), Undecided (UD), Disagreed (DA) and Strongly Disagreed (SD).

The instrument was validated for face and content validity by three experts, two from Vocational and Technical Education Department and one from Measurement and Evaluation Department all in Ekiti State University, Ado –Ekiti. The experts reviewed “the items in terms of their clarity, the appropriateness of the language and expressions used including the appropriateness of the instructions to the respondent.

The instrument was administered by the researcher himself to the staff of Denki Wire and Cable Nigeria Limited, Akure assisted however, by two research assistants. Two weeks were devoted to the administration of the instrument.

The data generated for this study was analyzed using the statistical package for social sciences (SPSS). The mean and standard deviation were used in answering the two research questions. The hypotheses were also tested using t-test at 0.05 level of significance.

Results and Discussion:

Research question 1: To what extent do the principles of total quality management implemented at Denki wire and cable Nigeria limited, Akure?

Table 2: Mean scores and Standard Deviation on the Extent to which the principles of total quality management were implemented at Denki wire and cable Nigeria limited, Akure.

S/NO	ITEM	SA	A	UD	DA	SD	Mean	Standard Deviation	t-test
1	Total quality management implementation affects organizational performance	25	12	5	1	2	9.57	8.28	4.01
2	All staff of Denki Wire and Cable Nigeria Limited involvement in the implementation of total quality management	4	6	18	17	0	11.57	8.49	-4.65
3	Failure to apply all total quality management principles during its implementation affects organizational performance	30	10	5	0	0	11.57	12.27	5.87
4	Challenges disrupt total quality management implementation in the organization	25	11	5	4	0	9.14	8.69	4.45

5	Failure to organize frequent employee training affects total quality management implementation	27	11	2	5	0	9.71	9.10	5.31
6	Satisfaction of customers is a driving force in our continuous move for quality production or quality of our products	39	6	0	0	0	6.14	11.70	9.78
7	The CEO is a driving force behind quality improvement efforts	34	4	7	0	0	8.28	10.34	7.59
8	External customers are involved in quality improvement	1	0	8	34	2	5.57	14.09	-6.81
9	Customers' complaints are studied for necessary corrections	34	6	3	2	0	8.71	12.14	6.86
10	Constant employee awareness and feedback on the status of quality are provided	29	12	3	1	0	8.57	10.23	6.12
11	Management encourages teamwork	25	15	4	1	0	8.28	10.09	5.21
12	The company has a quality manual	27	8	2	8	0	8.57	9.23	4.53
13	Top management shows commitment to quality	28	9	2	5	0	8.85	9.66	4.69
14	The company sends employees to training on quality management	15	20	6	4	0	9.57	7.78	2.31

Data contained in Table 2 shows the extent to which the principles of total quality management were implemented by staff in Denki Wire and Cable Nigeria Limited, Akure. The result revealed 12 items out of 14 items have their mean value range from 9.143 to 11.571 indicating that total quality management affect organization performance. The table also showed that the standard deviations (SD) of the items are within the range of 7.789 to 14.092 indicated that respondents were not far from one another in their responses.

Research Questions 2: What is the impact of total quality management implementation on organizational performance at Denki Wire and Cable Nigeria Limited?

Table 3: The impact of total quality management implementation on organizational performance at Denki Wire and Cable Nigeria Limited, Akure.

S/NO	ITEM	SA	A	UD	DA	SD	Mean	Standard Deviation	t-test
1	Adherence to quality control responsible for product quality.	30	10	5	0	0	3	1.34	1.57
2	Training and retraining given in the company is a determining factor in improving product quality.	25	11	5	4	0	3.55	1.37	1.06
3	Involvement of the whole organization in total quality management improves organization performance	27	11	2	5	0	3.68	1.51	0.79
4	Employees' participation in organizations' decision making increases employee commitment	39	6	0	0	0	4.34	0.73	5.96
5	Organizational performance improved in terms of more sales	34	4	7	0	0	4.48	1.3	7.14
6	Organizational performance improved in terms of products is a contributing factor to improve organization performance	34	2	8	1	0	4.19	1.9	1.11
7	Quality policies are reviewed regularly to meet	34	6	3	2	0	4.03	1.33	1.12

	the needs of the organization								
8	Management takes leading positions on guiding quality teams	29	12	3	1	0	4.16	1.87	1.02
9	Employees are motivated towards the organization's goals and objectives	25	15	4	1	0	4.03	1.69	1.09
10	Quality management is embraced in the vision of the company	27	8	2	8	0	3.68	2.44	0.33
11	Organization subscribed to quality award system	28	9	2	5	0	3.71	1.88	0.62

Data presented in Table 3 shows that the impact of total quality management implementation on organizational performance at Denki Wire and Cable Nigeria Limited, Akure. The result revealed 11 items have their mean value range from 3.00 to 4.80 indicating that total quality management has positive impact on organization performance. The table also showed that the standard deviations (SD) of the items are within the range of 0.73 to 2.44 indicated that respondents were not far from one another in their responses.

Testing of Hypotheses

H₀₁: There is no significant difference between the mean response of management staff and junior staff on the content extent of principles of total quality management is implemented at Denki Wire and Cable Nigeria Limited

Table 4: t-test analysis of the difference between the mean response of management staff and junior staff on the content extent of principles of total quality management is implemented at Denki Wire and Cable Nigeria Limited

VARIABLE	N	MEAN	S.D	Df	t _{cal}	P _{value}
Management Staff	12	71.70	8.30	43	0.52	0.01
Junior Staff	33	69.83	15.44			

From table 4, from the "Management Staff" group, there were 12 individuals with a mean score of 71.70 and a standard deviation of 8.30. While for the "Junior Staff" group, there were individuals with a mean score of 69.83 and a standard deviation 15.44. We only have the number of individuals (N = 33) and their mean score (69.83) and standard deviation (15.44). The calculated t-value (t_{cal}) was 0.5212, and the associated P-value was 0.01. To determine the statistical significance of the difference between the two groups, the P-value to the chosen level of significance, which is typically set at 0.05 or 0.01? In this case, the obtained P-value of 0.01 is less than the significance level, indicating a statistically significant difference between the "Management Staff" and "Junior Staff" groups.

H₀₁: There is no significant difference between the mean response of management staff and junior staff on the impact of total quality management implementation on organization performance at Denki Wire and Cable Nigeria Limited.

Table 5: t-test analysis of difference between the mean response of management staff and junior staff on the impact of total quality management implementation on organization performance at Denki Wire and Cable Nigeria Limited

VARIABLE	N	MEAN	S.D	Df	t _{cal}	P _{value}
Management Staff	12	81.70	9.20	43	2.86	0.04
Junior Staff	33	70.83	16.44			

From table 5 the mean response of the "Management Staff" (81.70) is higher than the mean response of the "Junior Staff" (70.83). The calculated t-value of 2.86 indicates a significant difference between the two groups. The P-value (0.04) with the chosen level of significance (usually 0.05), it was observed that the P-value is less than 0.05. This suggests that the difference between the mean responses of the "Management Staff" and "Junior Staff" groups is statistically significant. It is therefore, concluded that there is a significant difference in the perceived impact of total quality management implementation on organization performance between the management staff and junior staff at Denki Wire and Cable Nigeria Limited.

Discussion of findings

Research question one sought to find the extent to which the principles of total quality management were implemented at Denki Wire and Cable Nigeria Limited, several findings emerge: The implementation of total quality management is perceived to have a positive impact on organizational performance, with a mean score of 9.57. This suggests that the majority of respondents agree that TQM implementation affects organizational performance. Staff

involvement in the implementation of total quality management shows a significant disparity in ratings. While some respondents agree with staff involvement, others strongly disagree. This discrepancy raises concerns about the level of engagement and participation of staff in TQM implementation. The failure to apply all total quality management principles is viewed as detrimental to organizational performance. This is supported by a high mean score of 11.57, indicating a strong consensus that the failure to apply all TQM principles negatively affects organizational performance. Challenges in the implementation of total quality management are acknowledged, but they do not significantly impact the overall positive perception of TQM implementation. The mean score of 9.143 suggests that the organization is resilient in overcoming challenges and remains committed to TQM implementation. Failure to organize frequent employee training is considered to have a negative impact on TQM implementation. The mean score of 9.714 indicates agreement among respondents that regular employee training is crucial for effective TQM implementation. The satisfaction of customers is viewed as a driving force for quality production or the quality of products. However, there is a notable variation in perceptions regarding the extent to which customer satisfaction influences quality production. Further exploration and alignment of perspectives may be necessary to foster a customer-centric approach. The CEO is recognized as a driving force behind quality improvement efforts, as evidenced by a mean score of 8.286. This suggests that the CEO's leadership plays a significant role in driving quality improvement initiatives within the organization. The involvement of external customers in quality improvement efforts is met with disagreement and skepticism. The negative t-test value of -6.812 indicates a substantial difference in opinions regarding the involvement of external customers in quality improvement

processes. Based on these results, it is evident that Denki Wire and Cable Nigeria Limited has made progress in implementing total quality management principles.

Research question two sought to find the impact of total quality management (TQM) implementation on organizational performance at Denki Wire and Cable Nigeria Limited, several findings emerge, including mean scores, standard deviations, and t-test values: Item 1: "Adherence to quality control responsible for product quality" shows a high SA rating (30), a low SD rating (0), and a t-test value of 1.34. The positive mean score (3) and t-test value indicate a significant agreement that adherence to quality control is responsible for product quality. Item 2: "Training and retraining given in the company is a determining factor in improving product quality" has a relatively high SA rating (25), a moderate SD rating (4), and a t-test value of 1.37. The positive mean score (3.55) and t-test value suggest a significant agreement that training and retraining contribute to improving product quality. Item 3: "Involvement of the whole organization in TQM improves organization performance" shows a higher SA rating (27), a lower SD rating (5), and a t-test value of 1.51. The positive mean score (3.68) and t-test value indicate a significant agreement that involving the entire organization in TQM leads to improved organizational performance. Item 4: "Employees' participation in organizations' decision making increases employee commitment" has a significantly high SA rating (39), a low SD rating (0), and a t-test value of 0.73. The positive mean score (4.34) and t-test value indicate a significant agreement that employee participation in decision making increases employee commitment. Item 5: "Organizational performance improved in terms of more sales" shows a high SA rating (34), a low SD rating (0), and a t-test value of 1.3. The positive mean score (4.48) and t-test value suggest a significant agreement that improved organizational performance is reflected in increased sales. Item 6: "Organizational performance improved in terms of products is a

contributing factor to improve organization performance" has a high SA rating (34), a moderate SD rating (1), and a t-test value of 1.9. The positive mean score (4.19) and t-test value indicate a significant agreement that product improvement contributes to overall organizational performance improvement. Item 7: "Quality policies are reviewed regularly to meet the needs of the organization" has a high SA rating (34), a moderate SD rating (2), and a t-test value of 1.33. The positive mean score (4.03) and t-test value suggest a significant agreement that regular review of quality policies aligns with organizational needs. Item 8: "Management takes leading positions on guiding quality teams" shows a relatively high SA rating (29), a moderate SD rating (1), and a t-test value of 1.87. The positive mean score (4.16) and t-test value indicate a significant agreement that management plays a leading role in guiding quality teams. Item 9: "Employees are motivated towards the organization's goals and objectives" has a high SA rating (25), a moderate SD rating (1), and a t-test value of 1.69. The positive mean score (4.03) and t-test value suggest a significant agreement that employee motivation is directed towards the organization's goals and objectives. Item 10: "Quality management is embraced in the vision of the company" shows a higher SA rating (27), a relatively high SD rating (8), and a t-test value of 2.44. The positive mean score (3.68) and t-test value indicate a significant agreement that quality management is embraced in the company's vision, despite some variation in opinions. Item 11: "Organization subscribed to quality award system" has a high SA rating (28), a moderate SD rating (5), and a t-test value of 1.88. The positive mean score (3.71) and t-test value suggest a significant agreement that the organization has subscribed to a quality award system.

The result reveals that the implementation of total quality management at Genki Wire and Cable Nigeria Limited has a positive impact on organizational performance. Various factors, such as quality control adherence, training and retraining, organizational involvement in TQM, employee

participation in decision making, increased sales, product improvement, regular policy review, management guidance, employee motivation, and quality award subscription, contribute to the overall positive perception of TQM implementation..

Conclusion

The following conclusions are drawn based on the finding of the study; it is evident that relationship that exists between total quality management and organizational performance has enhanced progress in implementation of total quality management in Denki wire and cable Nigeria limited, Akure, , the study concludes that total quality management has a positive relationship with organization performance. The involvement of people and employee commitment enhance provision of quality products to their customers.

Recommendations

1. All the total quality management principles must be implemented in order to achieve organizational goal targets.
2. Organization should see total quality management principle as a continuous project which should not be ignored.
3. All staffs should join hand in the implementation of total quality management principle in the organization in order to achieve their goal target and satisfy its customers.
4. Denki wire and cable management should engage in frequent employee training in order to foster its quality attainment.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

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