
Empirical analysis of the quality dimension of a product

Sunday Ewah

Faculty of Management Sciences
Cross River University of Technology
Cross River State. Nigeria.

Monica P. Lebo

Department of Management, University of Calabar
Calabar. Nigeria.

Keywords

Quality, Product, Satisfaction, Standard, Consumer

Abstract

This study was an empirical analysis of the quality dimension of a product, and the main objective was to determine whether consumers' consider the quality of products as a determinant factor that affects their purchase decision. To achieve the set objective, 362 respondents answered the question that was asked using questionnaire. The analytical technique for test of hypothesis was Analysis of Variance (ANOVA). The results showed that consumers favour high quality products. This result validates the earlier work of Juran (1991) on the importance of maintaining quality products. This can be achieved through frequent assessment and monitoring of quality element of products or services.

Introduction

It is obvious that for a company's product to thrive in the ever dynamic business environment, that is characterized by severe competition and global interest, companies need to up-whole and maintain high production standard. The aftermath result of this effort is that quality products will be produced. If a company's culture is based on turning out high quality products for its domestic and foreign markets, it means the company must have an edge over competing firms and their products. This of course will generate profit for continuous business and diversification, to unexploited market.

Managing for quality to provide complete customer satisfaction is essential for surviving and thriving in today's competitive global market place. Most Customers will no longer accept or tolerate poor or average quality products. If a company want to continue, remain competitive, and make profit it has no choice but to adopt quality concept. In the developed countries of USA, UK, Japan and few emerging Asian Tiggers companies have learned the hard-won lesson that long term success requires delivering superior quality goods and services at good value. But that is not the case in Nigeria, many companies still compromise the quality of their products for various reasons. Sometimes to make excessive profits or something wrong with the production process. Which ever be the case, Nigeria consumers are so sensitive and can make inform decision as regards to the poor quality of products or high quality products. The surge of interest in quality product as the path to global competitiveness reinforces the importance of

marketing concept and service delivery. Quality conscious companies do this by involving employees of every business function in understanding and satisfying customer needs and wants. In fact businesses that are committed to quality become so customer-focused that they manage their businesses according to customer's definitions of quality (Boone and Kurtz 1995).

Marketers and businesses that don't learn the language of quality improvement in manufacturing and operations will become as obsolete as buggy whips. The days of functional marketing are gone. We can no longer afford to think of ourselves as market researchers, advertising people, and market strategist but as customer satisfiers and customer advocates who focused on the whole processes that result to high quality product (Beckham, 1992). Therefore the main objective of this study was to ascertain whether consumers really attached much emphasis on the quality dimension of a product; Research questions were form based on the set objective and this also guided the only hypothesis that was formulated. The remaining part of the study was anchored on literature review, methodology of the study, data analysis, discussion, conclusion and references.

LiteratureReview

According to Kotler and Armstrong (2001) various experts have defined quality as fitness for use, conformance to requirements, and freedom from variation. America Society for Quality define it as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs (Accessed online January, 2000). Quality describes the degree of excellence or superiority of an organization's goods and services. It is a broad term that encompasses both the tangible and intangible characteristics of a good or service. In a technical sense, quality can refer to physical traits, such as durability and reliability. Quality also includes the intangible component of customer satisfaction, the ability of a good or service to meet or exceed buyer needs and expectations. The true measure of quality is whether a business has satisfied its customers. "Quality is what your customer says it is not what you say it is. To find out about your quality, ask your customer (Boone and Kurtz; 1995).

Quality is more than just something nice that a company does for its customer: quality and customer satisfaction directly affect company profitability. In fact, they are crucial to an organization's continued existence. A company that fails to provide the same level of quality and customer satisfaction as its competitors will not stay in business for very long.

Organizations worldwide apply quality theories, principles, and methods to every business function. This movement called total quality management (TQM) is an approach that involves all employees in continually improving products and work processes to achieve customer satisfaction and world-class performance.

In a total quality organization, marketers develop products that people want to buy; engineers design products the way customers want to use them; production workers build quality into every product they produce; sales people deliver what they promise customers; information systems people use technology to ensure customer orders are filled correctly and on time; financial specialists help determine prices that give customers value. Total quality is the key to creating customer value, satisfaction and retention. Just as marketing is everyone's job, total quality is everyone's job (Kotler and Armstrong 2001). One of the best-known descriptions

of total quality management is, "Deming's 14 Points for quality improvement." He expects managers to adhere to production methods that will;

- ❖ make a long - term commitment to improve products and services, with the aim of becoming competitive, staying in business, and providing jobs.
- ❖ adopt the new philosophy of concern for quality. We are in a new economic age. Western management must awaken to the challenge, learn its responsibilities, and take on leadership for change.
- ❖ cease dependence on mass inspection to achieve quality and build quality into the product in the first place.
- ❖ end the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, and build a long term relationship of loyalty and trust.
- ❖ constantly improve the system of production and service so that quality and productivity also constantly improve and costs decrease.
- ❖ institute training on the job.
- ❖ institute leadership and the aim of supervision should be to help people and machines and gets do a better job.
- ❖ drive out fear so that everyone may work effectively for the company.
- ❖ break down barriers between departments so that people work as a team.
- ❖ eliminate slogans, exhortations, and targets that ask the workforce for zero defects and new levels of productivity such exhortations only create adversarial relationships because most of the causes of low quality and low productivity can be traced to the system of production and thus lie beyond the power of the work force.
- ❖ eliminate work standards (quotas) and the use of numerical goals on the factory floor. Substitute leadership instead.
- ❖ remove barriers that rob workers of the right to take pride in their work. Change the emphasis from sheer numbers to quality.
- ❖ institute a vigorous programme of education and self-improvement.
- ❖ put everybody in the organization to work on accomplishing the transformation, this transformation is everybody's job.

Note that these points encourage managers to view their organizations as systems that use the knowledge and skills of all employees to improve quality. Managers are responsible for communicating the goals of total quality management to all staff members, and for encouraging them to improve themselves and take pride in their work. Research determines customers needs and wants. This information is used to design and redesign functional, dependable goods and services. Defects are removed by steadily reducing variations.

Organizations build relationships of loyalty and trust with suppliers to improve incoming materials and to decrease costs. A true competitive advantage result when organizations move beyond continuous improvement to continuous product innovation. As Deming said, better quality and lower prices with a little ingenuity in marketing will create a market (Boone and Kurtz, 1995). Today, organizations recognize that improving quality is a

critical strategy for building competitive advantage. In a recent survey of U.S. business leaders, product quality and customer service were reported to be the most important goals for the success of the organization, (Boone and Kurtz, 1995).

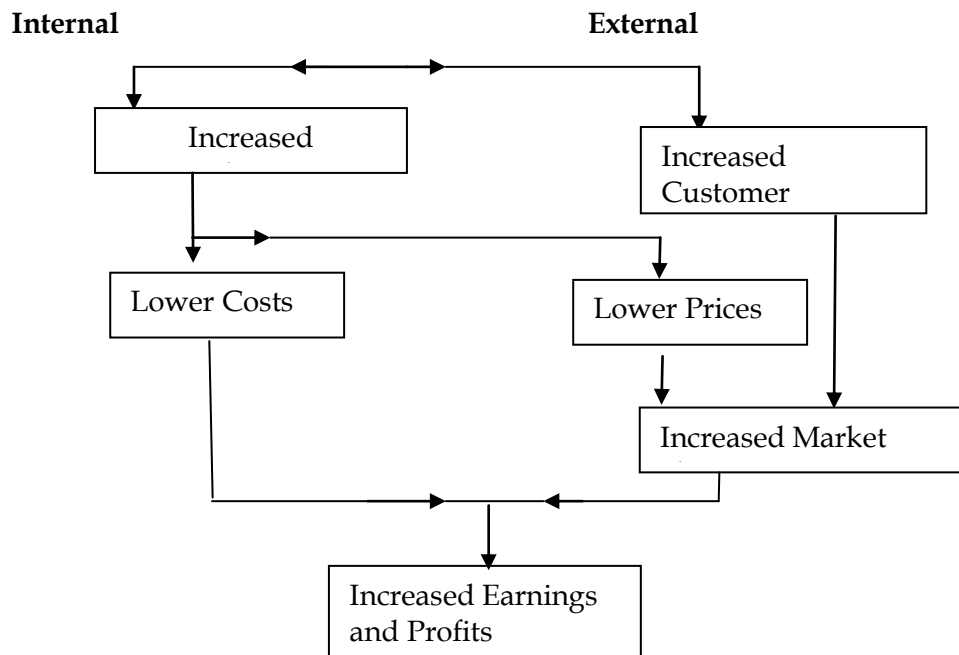


Figure 1: Quality Improvement in Product Model

Source: Boone and Kurtz, (1995).

Product Quality: Suffice to say that the literature on quality is replete with different definitions of quality. Baker and Hart (1989) cite the works of some authors as follows: Connel (1979) considered quality to be an amalgamation of functional performance and functional suitability, design and reliability. Baker and Abou-Zeid (1982) perceive quality in terms of relative sophistication. Curry (1985) considers quality as a tool for product differentiation and defines eight dimensions of quality: performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality.

Regardless of the semantic confusion over what product quality consists of, the role that quality plays in achieving organizational success is indeed incontrovertible. Baker and Hart (1989) allude to Schoeffler, Buzzel and Heany (1974) as rating product quality high on the list of factors influencing company profit performance and revealed that the quality of a product is related to success. Quality of a product can be looked at from a two perspective. In terms of performance, that is the level at which a product performs its functions and conformance implies the extent to which a product is free from defect and the consistency of all the deliverables.

Issues relating to the elusive product quality can be categorized as follows; differentiation, design, performance and raw materials, components and manufacturing system. They are briefly explained below;

Differentiation: Product differentiation strategy exists where the producers seeks to offer a modified version of the basic product to the target market. In the case of product, different styles can be produced to increase the prospect of consumers making choices. This may give domestic producers an edge over competing foreign brands as long as the quality is maintained.

Differentiation usually results in an appeal to upscale markets with higher status and higher priced products. That is to say, differentiation often involves a move to the high end of the markets. Therefore, the quality is developed to match buyer requirements and can enhance product differentiation as well as competitive success, (Porter, 1985).

Design: This is an integral part of product quality. There are three ways in which a shoe manufacturer may seek to offer the best quality product to potential consumers:

- ❖ The product manufacturer must ensure that the product can perform its designed function better than the products of competitors.
- ❖ Such a product must have better styling and aesthetic value
- ❖ The manufacturer should also strive to make the product offer customers higher levels of satisfaction. Each instance is a strategy based on uncompromising standards. Baker and Hart (1989) cite Saunders and Wong (1985) as concluding that successful companies are stronger on design than unsuccessful companies. Walsh and Roy in 1983 studied two non-price product policy factors namely; design and innovation, defining design as fitness for use or function and innovation signifies creativity.

Performance: If a company wants to achieve the goal of designing an excellent product, then its emphasis must be on superior performance. Design excellence, therefore, stresses superior performance. Products can be differentiated in terms of how well they perform their tasks in the marketplace. For example in the global marketplace for product, Italian, Japanese, German products such as cars emphasized superior quality (Baker and Hart 1989). Indeed, superior performance can take several forms. From the foregoing, product quality can be improved by enhancing product performance. Performance can also be evaluated objectively.

Raw Materials, Components and Manufacturing Systems: There is no gainsaying the fact that the qualities of raw materials or inputs and components purchased will have significant impact on the qualities of product to be manufactured. Connell (1979) stresses the value of component variety reduction in increasing the precision and reliability of products. He states further that the realization of such benefits calls for the ability as well as willingness to design and develop products around a narrower range of components. Baker and Hart (1989) recognizes the contribution of both raw materials and manufacturing systems in enhancing the quality of product produced and contend that manufacturing is intrinsic to competitive success as it impinges on product development and consumer satisfaction in both the short and long term.

Product modification, Improvement and Development: It is axiomatic that product improvement and new product development are the blood of firms. Needless to say that the separation of product modification and development from the concept of the product quality is

somewhat arbitrary, informed by the exigencies of simplicity and clarity. Nevertheless, the factors that comprise product policy are different ways of gaining competitive advantage as well as achieving success.

Quality Dimension of a Product

Bartol and Martin (1991) in their work gave a thorough explanation of David Garvin's important dimensions of quality to include;

- ❖ Performance: This is a product's primary operating characteristics.
- ❖ Features: This implies supplements to the basic functioning characteristic of the product or services.
- ❖ Reliability: This dimension of quality address the probability of a product's not working properly or breaking down altogether within a specific period. Time is really required to assess reliability, this means it does not apply to products and services that are consumed immediately.
- ❖ Durability: This describes how long a product or service will last. It could also mean the useful life span of a product or service.
- ❖ Serviceability: In this case it could mean two things. First, it refers to the promptness, courtesy, proficiency, and ease of repairs of the product if there is defect. Second, the ancillary benefits that are enjoyed by consumer in conjunction with the actual product or services.
- ❖ Aesthetics: This is quite subjective on the part of the buyer. Its quality dimension is based on how a product looks taste, smell sound, artistic, etc.
- ❖ Perception: This refers to individual consumer's subjective assessments of product or service quality. Such assessment sometimes is based on incomplete information, but consumers often rely much on what they perceive a product quality should be.

Methodology of the Study

In selecting the sample size for this study the emphasis was more on reflecting the characteristics of respondents based on a holistic perspective, bearing in mind the study objectives. Hence the researcher used Topman's formula to derive the sample size $\rightarrow n = \frac{Z^2 P \times Q}{E^2}$

Where n = Sample size; Z= 1.96, P = Probability of positive response , Q= Probability of negative response, E=0.05 which implies amount of error that can be allowed.

Using inferential judgment and convenience P is represented as 60%. It is important to note that sample size is only determined based on the circumstances and convenience, while taking into consideration, time, cost and precision (Anyanwu, 2000).

$$\text{Therefore } n = \frac{(1.96^2) \times 0.60 \times 0.40}{(0.05)^2} = \frac{3.8416 \times 0.24}{0.0025}$$

$$n = \frac{0.9212}{0.0025} = 368.79$$

To derive the adjusted minimum sample size the researcher used the formula developed by Devaus (1991) as stated below;

$$n' = \frac{n}{1 + \frac{n}{n}}$$

where n' = the adjusted minimum sample size

n = the minimum sample size; N = The total population from where the sample size is derived.

$$n' = 1 + \frac{\frac{368.79}{286.880}}{\frac{368.79}{1+000.12}} = \frac{369.79}{1.0012} = \frac{368.79}{1.0012} = 368.3 \rightarrow \text{represent the sample size}$$

The researcher developed questions in the form designed by likert in questionnaire and administered to 368 respondents in Abia and Cross River States all in Nigeria. The analytical techniques for the test of hypothesis formulated was the analysis of variance (ANOVA) introduced by Fisher.

Data Analysis.

Table 1: Distribution According to State of Respondents and Response Rate

State	No. of Questionnaire Administered	No. of Returned Questionnaire	%	No. of Unreturned Questionnaire	%
Cross River	139	135	36.7	4	1.1
Abia	229	227	61.2	2	0.5
Total	368	362	98.4	6	1.6

Source: Field Work, 2012.

The analysis above shows that 139 copies of questionnaire were allocated and administered in Cross River State, out of which 135 (36.7%) were returned as valid questionnaire. The remaining 4(1.1%) copies were not returned hence they were regarded as invalid questionnaire.

Abia State had a total of 229 questionnaire administered to respondents, out of which 227 (61.2%) were completely filled and return, but the remaining 2 copies of questionnaire were not returned. Thus, the total number of returned questionnaire was 362, representing 98.4%, while the invalid questionnaire was 6 copies (1.6%). This result shows that the response rate was quite commendable. That explains the personal approach adopted in the administration and collection of questionnaire, while taking into consideration, convenience, time, precision, and cost (Anyanwu, 2002).

Table 2: Distribution According to Occupation

Occupation	No. of Respondents		Total No. of Respondents	% of Respondents
	Cross River	Abia		
Civil servant	30	40	70	19.3
Self employed	10	20	30	8.3
Student	25	25	50	13.8
Distributors/resellers	35	65	100	27.6
Manufacturers	28	62	90	24.9
Others categories	7	15	22	6.8
Total	135	227	362	100.0

Source: Field Work, 2012.

Table 2 which depicts occupational distribution of all the respondents indicates that 70 (19.3%) of the respondents were civil servants, 30 (8.3%) were self employed. Those that were students were 50 (13.8%), manufacturers and other categories had 90 (24.9%) and 22 (6.8%) response rate respectively. The majority response rate came from the business sector, who happens to be 100 (27.6%) respondents. It invariably means that the majority response came from most of the people who are in the field work or engaged in one form of business or another in order to earn a living. Moreover, they have firsthand experience with consumers.

No. of Respondents

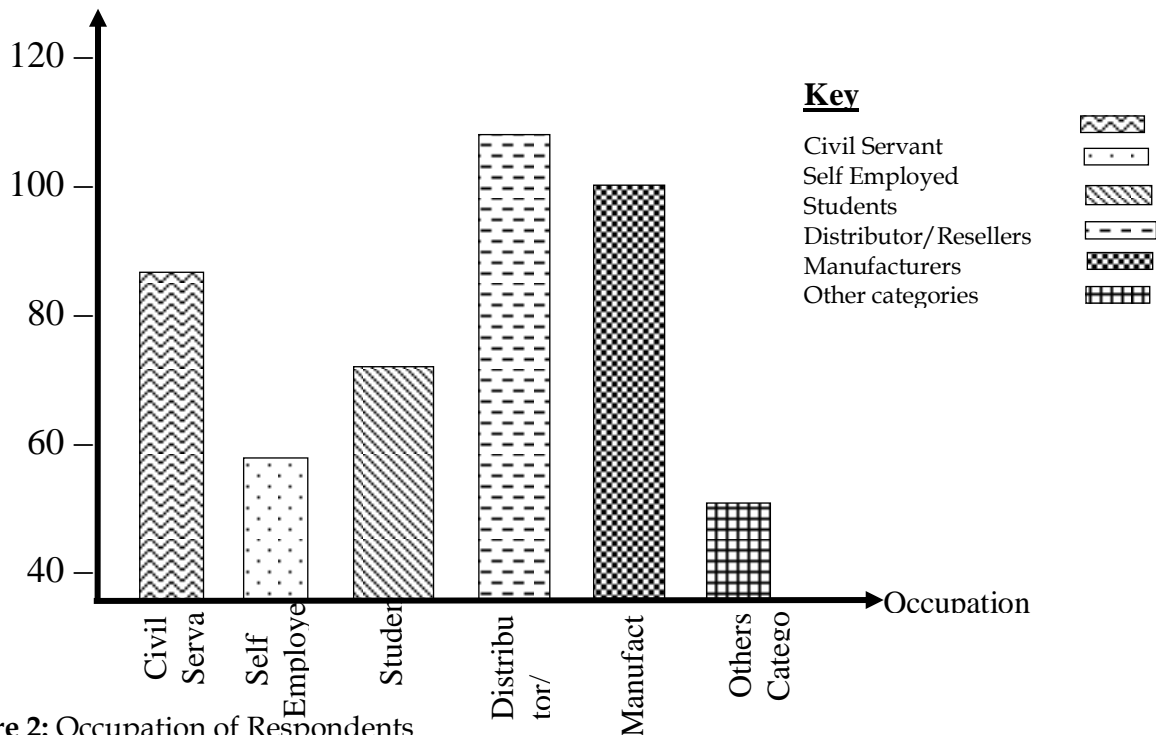


Figure 2: Occupation of Respondents

All the respondents that answered the questionnaires that were distributed are represented in figure 1 and their occupational distribution as stated above. Distributors/resellers were more in number, followed by manufacturers, the next groups were civil servants, students, self employed and other categories.

Table 3: Quality of a Product and Influence on Purchase Decision

Responses	No. of Respondents		Total No. of Respondents	% of Respondents
	Cross River	Abia		
Strongly Agree	55	83	138	38.1
Agree	40	96	136	37.6
Undecided	20	22	42	11.6
Disagree	15	21	36	9.9
Strongly Disagree	5	5	10	2.8
Total	135	227	362	100.0

Source: Field Work, 2012.

Table 3 lays emphasis on the influence of quality of a product on individual consumer's purchase decision. From the analysis above, it can be observed that 138 (38.1%) respondents strongly agreed and 136 (37.6%) of the respondents agreed. 42 (11.6%) respondents maintained neutrality and those respondents that disagreed and strongly disagreed were 36 (9.9%) and 10 (2.8%) respectively. Cumulatively, 274 (75.7%) of the respondents accepted the research question. The result therefore means that majority of the respondents were of the opinion that the quality of a product influenced their purchase decision. This accounts for why the demand for locally made product has been on the decline, due to compromised quality of some brands. This of course has implications on policy issues. This result was also confirmed when the hypothesis formulated was tested.

Table 4: ANOVA Test of Hypothesis

Sources of Variation	Sum of Squares	Degree of Freedom	Mean Square	F. Ratio	F. Tab. Val.
Explained between columns	SSA = 846.4	1	MSA = 846.4	0.80	5.32
Error or unexplained within columns	SSE = 8379.4	8	MSE = 1047.4		
Total	SST = 9225.8	9			

Source: Researcher computation, 2012.

Decision: The calculated value of F_{is} 0.80, which is less than the table value of F which is 5.32 (cal. val. $0.80 < \text{tab. val. } 5.32$) at 5% level of significance and 1 and 8 degree of freedom. The result above means that H_0 is accepted and H_1 is rejected, and the acceptance of the null hypothesis implies that there is no significant difference between consumers' perception of quality of a product in the two states and their purchase decision, which means consumers purchase of product depends much on the quality dimension.

Discussion of Findings

When research question was asked based on what influence could the perception of quality of product have on the individual's willingness to make a purchase, it was discovered that majority of the respondents said that, there is no significant difference between consumers perception of quality of product and consumers desire to buy the product. And that one of the major disadvantages of product produced in domestic industry was the problem of quality. Suffice to say that consumers always want satisfaction from the product they buy and in the course of such buying they consider the quality of the product they buy. The research result confirmed Juran (1991) earlier study that quality means a product is fit for use. Most Scholars had acknowledged that the perception of quality of product means the totality of features and characteristics that bear on its ability to meet and satisfy customers' requirements. Baker and Hart (1989), Schoeffler, Buzzel and Heany (1974) all of them rated product quality high on the list of factors influencing company profit performance or sales.

Shetty (1987) revealed that the quality of a firm's product is related to the success of the firm, that is consumers make purchase decision when they are satisfied with the quality

dimension. Porter (1985) contends that the quality of a product should be developed to match buyer requirements and should enhance product differentiation as well as competitive success. From a marketing perspective quality means a product ability to satisfy customer's needs or requirements. This definition focuses on the customers and how the customer thinks a product will fit some purpose (McCarthy and Perreault, 1993). This is because consumers consider the quality of a product before buying. The finding of this study and conclusion is consistent with the aforementioned scholars' earlier work on the quality of a product. Odiogor (2007) views concerning made in Nigeria product gave a negative impression as a result of low rating or quality. He concluded that local manufacturers should maintain and produce high quality product that will attain international standard and acceptance.

It is correct to say, therefore that, buyers place much emphasis on quality more than any other factor. Consequently what differentiates the product of developed countries and that of the developing countries lies in the quality of the product each turns out at any given period. In the true sense of it, some producers especially in Nigeria may be willing to produce high quality product but the necessary raw inputs are not available to attain that required standard. This of course is as a result of some attendant constraints that are either artificial or constituents of government policy apart from the gullible attitude of some businessmen. The implication is that if the perceived quality of product as depicted in the minds of buyers did not meet their expectations, they will not buy. Therefore the local industry should produce quality products that will attract patronage and compete with the foreign brands.

Conclusion

It is worthy to note the immense importance of the quality of a product and what it does to buyers purchase decision process. Therefore firms should always be careful when it has to do with decisions concerning quality dimension of their product. They should not compromise quality because of the cost factor attached to each unit of production, but rather quality must be given consideration. This is because a good quality product can advertise and market itself. Whoever has tried the company high quality product becomes the mouth piece and announcer of the company's product. Therefore product quality must be uphold

References

- American Society for Quality (2000). Accessed online at the American Society for Quality's Web site at www.asq.org. January, 2000.
- Anyanwu, A. (2000). *Research Methodology in Business and Social Sciences*. First Edition. Owerri-Nigeria, Canun Publishers Nig. Ltd. 259 P.
- Baker, M. J. and Abou-Zeid, E. D. (1982). *Marketing and Introductory Text* (4th Edition). Britain, Macmillan, Hampshire, 496 P.
- Baker, M. J. and Hart, S. J. (1989). *Marketing and Competitive Success*. Britain, Philip Allan, Hertfordshire, 508 P.
- Bartol, K. M. and Martin, D. C. (1991) *Management*. McGraw-Hill, Inc. Printed in the USA.
- Beckham J. D. (1992) Expects the unexpected in Health care marketing future. *The Academy Bulletin* July, Pp3.
- Boone, L. E. and Kurtz, D. L. (1995). *Contemporary Marketing*. Eight Edition, U.S.A. The Dryden Press. Harcourt Bruce College Publishers, 737 P.
- Connel, D. (1979). *The UK's Performance in Export markets: Some Evidence from International Trade Data, Discussion*. Paper 6, Nedo.

- Curry, D. J. (1985). Measuring Price and Quality Competitions. *Journal of Marketing*.49 (Spring), 105-115.
- Juran, J. (1991). *Total Quality Management*. In Poole and Warner (2001) Human Resources Management T. J. International Ltd. Cornwall 578 P.
- Kotler P. and Armstrong G. (2001).*Principles of Marketing*. Ninth Edition, New Delhi-110001.Prentice Hall of India Private Limited.785 P.
- McCarthy, J. E. and Pereault, W. D. (1993).*Basic Marketing: Global Managerial Approach*.Boston, U.S.A., Irwin Homewood, 763 P.
- Nickels, W. G., Mchugh, J. M; and Mchugh, S. M. (1999).*Understanding Business*. 5th Edition, New York. Irwin/McGraw-Hill Companies Inc.669 P.
- Odiogor, H. (2007). South Africa: *Made in Country Advertises and Nigerian Consumers*. Journalist Write from Lagos. Posted to the Web. 28 September.
- Porter, M. (1985).*Competitive Advantage: Creating and Sustaining Superior Performance*. New York, USA. The free Press, 421 P.
- Saunders, J. and Wong, V. (1985).In Search of Excellence in UK. *Journal of Marketing Management*. 1(2), Winter. 65.
- Schoeffler, S., Buzzell, R. D. and Heany, D. F. (1974). Impact of Strategic Planning on Profit Performance.*Harvard Business Review*, March/ April. 137 - 145.
- Shetty, Y. K. (1987). *Product Quality ad Competitive Strategy*. Business Horizons, May/June, 98 P.
- Walsh, V. and Roy, R. (1983), *Plastics Products: Good Design, Innovation and Business Success*, The Open University, Design Innovation Group DIG- 01, August.115 P.
-