

The Place of Total Quality Management (Tqm) in Agribusiness: A Case Study of Cadbury Nigeria Plc

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ABSTRACT

This study examines the role of quality products in an agribusiness enterprise and assesses the level of awareness about TQM amongst staff and customers of the company and also identifies the socio-economic characteristics of respondents that affect quality acceptance. A hundred customers and thirty staff of the company were sampled using simple random sampling method. The result of the data shows that there is a high level of awareness about TQM amongst staff of the company and that quality is measured at all stages of production in the company by meeting minimum operational standard. Also, the study revealed that different reasons make customers prefer the company's products among which are, high quality products sold at reasonable prices, hence, making cost on quality effective in increasing the company's profit. The result of the probit regression model indicated that gender, marital status, salary structure, formal education and working experience are statistically significant and have a high probability of limiting the intake of low quality products.

Key words: *Total Quality Management (TQM), Agribusiness and Cadbury PLC*

1. INTRODUCTION

In a free market economy, undistorted by shortages and monopolies, product quality remains a key-trading factor. Quality is preferred and greatly emphasized in all areas of product manufacturing e.g. steel construction, automobile and food processing. The Chambers Universal dictionary (2005), defined quality as the extent to which something has features - good or bad, wanted or unwanted. However, quality in food includes purity, safety, economy, taste and a variety of other attributes.

From a practical standpoint, one nutritional need, the food that a person chooses and the amount they eat depends largely on the quality. The consumer decides on the choice of food based on the relative quality and price. Quality has been defined as the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied need (Gilbert 2002).

We use all our physical senses in selecting food (sense of sight, smell, touch, taste and hearing). Food quality detectable by our senses can be grouped into 3 categories as follows:

- Appearance factors including such properties as size, shape, wholesomeness, form of damage loss, transparency, and color consistency.
- Textural factors such as hand feel, firmness, softness, juiciness e.t.c.
- Flavor factors such as taste, odor, sweetness e.t.c. (Wilbur 1998)

Quality must therefore meet the requirements of the customer.

Food serves to satisfy hunger and also sustain life. Food products should do this and also please the senses, be convenient prepare and consume as well as durable. Their prices should be reasonable and they must not adversely affect human health. Safety is the particular sensitive attribute of food product quality. It must not only be free from health hazards but also be environmentally friendly. As a result the food processing company must not only prevent all known environmental hazards but also anticipate and avoid risks.

Product variation inevitably exists in both natural composition and production processes. In reality, there is nothing produced or processed that is perfect. Variation is ever prevalent in all plant operations. We are only concerned when the degree of variation causes difficulty in product operations or is harmful to the product. Quality control is used to keep operational variation in check. This is where quality control fits into the plant operation. Hence, there is a need for absolute quality management in food and beverage production industry.

Furthermore, agribusiness provides food and clothing essential for wellbeing. The failure of an agribusiness concern affects the supplier, workforce, investors, creditors, users of the product, consumers and government through the loss of revenue. The case study of this research work is a perfect example of an agribusiness concern. The company, Cadbury Nigeria Plc is involved in food and beverage production and processing. The study is set to know the extent to which TOTAL QUALITY MANAGEMENT i.e. quality awareness level in people, process and product is carried out.

Most agribusiness organizations have quality control department as an integral part of their organizational structure. The status of the quality control department depends on the quality control philosophy of the organization. It also depends on the product type and marketing strategy. There are companies that emphasize total quality control and some that use acceptable sampling methods. Whatever method is adopted, the underlying requirement is a product that continuously meets customers' expectation and the required standards.

The method of establishing a viable control outfit, operating and improving on it is called QUALITY MANAGEMENT. It is the trilogy of quality planning, quality control and quality improvement. Where there is already a quality control outfit and quality control functions are already being practiced, it is quality improvement that is usually performed. The essence of quality improvements is to study the existing facilities and highlight areas of high expenditure in the course of performing quality control activity. This area x-rayed to find out if there are methods of reducing cost by improving on practice.

As technology advances, so also the production processes of an agribusiness enterprise advances in a competitive market economy. All the advancement in the production process is geared towards producing a quality product that will fit the use of the consumers. Hence, there is need for quality improvement in food processing to continuously meet the ever changing expectation of the consumers. Furthermore, the cost of both internal and external failure are too enormous to bear and can be avoided by incorporating quality in people, process and product. It is thus, important to study the place of total quality management in agribusiness in order to encourage investors in this enterprise.

Upon this background, this study therefore aims at assessing the level of quality awareness amongst the staff and customers of the company, examine the various quality control programmes in the company and their cost effectiveness and also identify some of the problems faced by the company in meeting the quality standards.

2.0 METHODOLOGY

2.1 Area and Scope of Study

The scope of this study is limited to an agribusiness enterprise with particular emphasis on processing, production and distribution components of agribusiness. The study covers the activities involved in quality management in Cadbury Nigeria Plc located in Lagos as well as their customers both in Lagos and Ado-Ekiti. Information from 2004-2008 balance sheets of the company's annual report and accounts was collected.

2.2 Sample Size and Sampling Procedure

For the purpose of this research, a total number of thirty staff of Cadbury Nigeria Plc was interviewed and the staff was selected randomly from four departments of the company. Also, a hundred customers of Cadbury Nigeria Plc were selected randomly and interviewed in Lagos markets as well as Ado-Ekiti markets using random sampling techniques.

2.3 Data Collection Method

The data used for this research was obtained from primary and secondary sources. The secondary sources include the use of the company's annual reports, periodicals, journals and bulletins as well as seminar papers which covered between 2004-2008.

The primary sources include personal interviews with staff and customers of the company as well as use of structured open-ended and close-ended questionnaires administered to the staff and customers of the company. The use of questionnaires to an extent eliminated the bias which could have been introduced by the variation in the way interviewers question respondents hence it allows respondents to be more honest.

2.4 Analytical Techniques

The types of analytical tools employed in this research include descriptive statistics and probit model.

Descriptive statistics involves the use of frequency distribution, measures of central tendency, measures of dispersion, percentages, totals, averages.

Probit model was employed to examine the determinants of respondents' willingness to pay for quality products.

The model can be expressed as;

$$Q = f(X\beta + \epsilon)$$

Where;

Q = Customers willingness to pay for high quality products (Yes=1, No=0)

B = vector of respective parameter

ϵ = independent distributed error term

X = Vector of explanatory variable

EXPLANATORY VARIABLES

Xi	-	Vector of explanatory variables
X1	-	Age (years)
X2	-	Gender (Female=0, Male=1)
X3	-	Dummy variable for marital status (Single=0, Married=1)
X4	-	Household size (number of individuals)
X5	-	Job description (Skilled Labor=1, Unskilled Labor=2)
X6	-	Salary (₦)
X7	-	Formal education (years)
X8	-	Working Experience (years)
X9	-	Perception of Cadbury products by consumers
X10	-	Reason for preferring Cadbury products by consumers

3. RESULTS AND DISCUSSION

Cadbury Nigeria Plc is one of the leading producers of foods and beverages in the country. There are various departments such as Quality Control, Cereal Conversion, Research and Development as well as the Corporate Affairs department e.t.c.

3.1 Socio-economic Characteristics of Respondents

Table 1 shows result of the socio-economic characteristics of the respondents. These include variables like age, marital status, household size, formal education, working experience, salary structure, job description, e.t.c. It shows that 13 percent of the respondents who participated in supplying information by filling the questionnaires were within the age range of 18-24, and 17 percent, 39 percent, 14 percent, 6 percent, 11 percent within the age ranges of 25-33, 34-40, 41-45, 46-50, 51-55 years respectively. 37 percent of the respondents who provided information for this research work were females, while the remaining 63 percent were males. 44 percent of the respondents were single while the remaining 56 percent were married. 50 percent of the respondents were within 0 - 2 family members, while 37 percent of the respondents were within 3 - 5 persons in the family, the remaining 13 percent of the respondents had a family size range of 6 - 8. A greater proportion of the respondents (approximately 75 percent) were engaged in skilled labor practicing professional jobs like law, medicine, engineering, computer analyst, stock brokering, banking, while the remaining 25 percent of the respondents were engaged in unskilled labor with meager earnings, like artisans. 28 percent of the respondents were within the salary range of ₦ 0 - ₦49,999, while 33 percent of the respondents were between the salary range of ₦ 50,000 - ₦ 99,999, and 21 percent of the respondents received ₦ 100,000 - ₦ 149,999, 22 percent of the respondents obtained ₦ 150,000 - ₦ 199,999 as salary, while only 2 percent each of respondents were receiving salary ranges of ₦ 200,000 - ₦ 249,999, ₦ 250,000 - ₦ 299,999 and ₦ 300,000 and above. 18 percent of the respondents had formal education, 39 percent of the respondents had secondary education, while 34 percent of respondents had tertiary education. 47 percent of the respondents were new on the job they were doing, while 18 percent had acquired 2 - 3 years of experience, 16 percent and 15 percent of the respondents had 4 - 5 and 6 - 7 years of experience respectively, while only 4 percent had 8 - 9 years of experience in their occupation.

3.2. Determinants of Quality Acceptance by Consumers

Table 2 shows the probit model which seeks to explain the probability of customer's willingness to pay for high quality Cadbury products as a result of the aforementioned explanatory variables. The result of the analysis shows that the dependent variable which is a binary (dummy) variable indicating whether a household is affected by some form of quality changes or not. The analysis revealed that the probability of customer's willingness to purchase and use Cadbury's quality products is positively influenced by marital status, family size, job description, salary formal education, age, working experience and negatively affected by gender, perception of Cadbury's products, and the reasons for preferring Cadbury's products. Of all the included variables only marital status, job description, salary structure, formal education, age and working experience were statistically significant. Variables like age had a statistical significance level of 1%, while marital status, job description, salary structure were significant at 5%, working experience was statistically significant at 10% level. The signs of the coefficient of the independent variables were estimated and the significance of the independent variables to determine the impact each variable has on willingness to pay for high quality products. From the result, the log likelihood ratio of -2.833e-07 and the chi-square of 67.86 are significant at 1%, this is because the probability of chi-square is less than 0.01, and this means that the model has a good fit.

Age was directly related to the dependent variable, due to the fact that the more people grow older and acquires knowledge, the better choices they will make concerning buying higher quality products which would ensure safety of health and satisfaction.

It is indicated that marital status has a high probability of being affected by reduction in quality standards of Cadbury's products, i.e. married couples easily notice changes in quality than single individuals and they adapt to the changes by switching to high quality products.

Job type which is directly related to the dependent variable is significant, as the more a person engages in skilled (professional) job the more exposed they will be concerning the hazards in taking low quality products and vice-versa.

Salary structure to a large extent also has a high probability of affecting the choices of people whether to procure high quality products or not, as their pocket capacity largely determines their purchasing ability.

Formal education which is statistically significant at five percent also had influence in determining the extent to which people consume high quality products as the more people acquire education in formal institutions and get enlightened, the more they will want to consume the best products.

3.3. Quality Measurement in the Company.

Table 3 shows that all the respondents agreed that quality is measured by adhering to a minimum operational standard set by the Standard Organization of Nigeria (SON). This unanimous decision by all the respondents agrees with Iyayi's (2007) opinion that quality is what everyone in an organization must know and be able to relate to. Also, Spenley (2003) said that quality is measured by its conformance to certain documented standards.

3.4. Cost Effectiveness of Quality Control Programme

From table 4 it is indicated that, the cost of quality control is 30% of the total cost of producing each product. This shows that the cost on quality is very high and the consumers are ready to pay for the resultant cost. This is evident in the high marketing price of each product and the wide marketing margin.

The higher the cost on quality control the higher the opportunity for the company to make more profit because the consumers are willing to pay for quality products so long as it meets their needs.

3.5. Problems Militating Against Conformity to Quality Standards in Cadbury Nigeria PLC

From the analysis of the questionnaires and personal interviews with the staff of various departments of the company some problems were identified militating against meeting quality standard. Such problems include:

- Delay in the release of quality control results, which temporarily stop the continuous process of production because until the quality is assured, production cannot continue.
- Need for inter-departmental cooperation because daily activities and decision anywhere in the company may slightly directly or indirectly influence product quality. Such quality related activities and decisions occur not only in the technical sector but also in marketing, finance, purchasing, sales, distribution e.t.c. Since nearly everybody in the company is or may be in the position to influence product quality it follows that everybody must be quality-minded.
- There is need for regularly scheduled periodical training and refresher courses for the staff. Analysis of the data collected shows that majority of the staff prefer in-house training. This is important because what is to be taught can be easily related to the company's operations. However, an outside consultant may be sought to organize such training.
- Lastly, one of the problems identified was the complacency of the factory operatives.

4. CONCLUSION AND RECOMMENDATIONS

The result of the analysis shows that TQM is fast gaining ground and has come to be one of the several tools which the management of Cadbury Nigeria Plc is using to meet the needs of its customers and the goals of its shareholders.

The Quality Control department is well funded as it has been shown earlier that 30% of production costs are used for quality control. The goal of any competitive industry like Cadbury Nigeria Plc is to produce a product into which quality is designed, built, marketed and maintained at the most economical cost, which allows for full customer satisfaction. The company has built quality reputation into their products over many years of patient application of Total Quality Management.

Simple statistical averages and percentages were used to analyze the data collected from the staff and the customers of the company while probit regression model was used to analyze the relationship between the socio-economic factors to their rate of purchase of Cadbury's quality product. The result of the analysis shows that all the staffs are aware of the concept of TQM and that quality is measured by meeting minimum operational standards as specified.

Furthermore, the stages at which quality should be measured range from the raw material stage at the beginning of the production process as well as the packaging stage, at the end of the production process. Therefore, if there is variation in the standard of raw material, the supply is rejected and returned to the supplier.

However, the socio-economic factors that affect quality acceptance by the customers include low price multiple usage, easy product availability and with quality of product being the most important of all the factors that make consumers purchase a particular product because of its fitness for use. Also, age, marital status, job description, salary structure and formal education influence the rate at which consumers purchase Cadbury's products. It has been shown that the higher the expenditure on quality of product, the higher the profit made by the company.

In order to achieve excellent quality in product and services the identified problems highlighted must be resolved, though the problem does not persist as such but once in a while they do happen especially in periods of social unrest in the country. But this problem can be averted if the Quality Control Department is made independent and sufficiency stocked throughout the year, this will remove all causes of delay in quality control results.

Furthermore, the purchasing department must ensure that supplies are provided at the appointed time so that production can commence operation as scheduled and Quality Control department should act swiftly to the product signals and release the result of its quality control promptly for action.

Training must be in-house and continuous. Basically, everybody in the organization must be imbibing the concept of TQM. Refresher courses on quality control should be sandwiched into the production programmes and staff in production and quality control must be abreast of trends in quality control techniques and equipments.

Also, there must be intra and inter-departmental cooperation within and among the departments of the company. This is necessary to influence decisions, which normally accompanies quality control activities for better productivity.

Research and development is a vital venture that will contribute immensely to the improvement of the nutritional and safety aspect of raw materials and of the finished products. It will also help to make the product more desirable by the consumers by continuously meeting the ever-changing needs.

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Socio-economic Characteristics of Respondents

Table 1: Socio-economic Distribution of the respondents

Sex	Frequency	Percentage
Female	37	37
Male	63	63
Total	100	100
Age		
18 - 24	13	13
25 - 33	17	17
34 - 40	39	39
41 - 45	14	14
46 - 50	6	6
51 - 55	11	11
Total	100	100
Marital status		
Single/Divorced Widowed (0)	44	44
Married (1)	56	56
Total	100	100
Educational Background		
Primary Education (1-6)	18	18
Secondary Education (7-12)	39	39
Tertiary Education (13-16)	34	34
Total	100	100
Household size		
0 - 2	50	50
3 - 5	37	37
6 - 8	13	13
Total	100	100
Job		
Unskilled	25	25
Skilled	75	75
Total	100	100
Working Experience(yrs)		
0 - 1	47	47
2- 3	18	18
4- 5	16	16
6- 7	15	15
8 -9	4	4
Total	100	100
Salary (N)		
0 - 49,999	28	28
50,000 - 99,999	33	33
100,000-- 149,999	21	21
150,000 - 199,999	22	22
200,000 - 249,999	2	2
250,000 - 299,999	2	2
300,000 and above	2	2
Total	100	100

Source: Field survey 2009

Table 2: Probit Analysis of Determinants of Quality Acceptance by Consumers

Variables	Coefficient	Probability
Age	*0.1328 (0.9155)	0.009
Gender	-0.6005 (0.5713)	0.293
Marital status	**0.8151 (0.4990)	0.040
Family size	0.1059 (0.5352)	0.989
Job Description	**0.9488 (0.6857)	0.048
Salary	**0.2732 (0.2347)	0.024
Formal education	*0.0629 (0.0323)	0.008
Working experience	0.2692 (0.1608)	0.951
Perception of Cadbury products	-163.0173 (117.6047)	0.898
Reason for preferring Cadbury products	604.717 (8212.8)	0.923
Constant	0.0313 (0.6759)	
X2	67.86	
Degree of Freedom	10	
N (Sample Size)	100	
Log Likelihood	-2.833e-07	

Significance Level: * represents significance at 1%, ** represents significance at 5%, *** represents significance at 10%. Figures in parentheses are standard error.

Table 3: Quality Measurement in the Company.

RESPONSES	NO. OF RESPONDENTS	PERCENTAGES
Cost of production	0	0
Meeting minimum operational standard	30	100
Time spent on production	0	0
Price of products	0	0
Others	0	0
Total	30	100

Source: Field survey 2009

Table 4: Distribution of Cost of Quality Control Programmes of Products

Parameters	Year	Bournvita (900g)	Tom- tom	Buttermint	Knorr
Average cost of quality per product (N)	2005	125.2	18.9	17.88	52.3
	2006	126.1	20.4	17.8	54.3
	2007	127.3	22.5	17.95	65.3
	2008	128.5	23.7	18.1	62.3
Average cost of each product (N)	2005	284	40.68	39.9	72.3
	2006	287	45.07	42.9	74.3
	2007	291	48.04	44.5	82.3
	2008	295	52.67	48.08	92.3
Average cost of input for each product (N)	2005	258.8	34.1	28.37	42.7
	2006	260.9	37.6	28.2	44.7
	2007	263.7	42.5	28.55	55.7
	2008	266.5	45.3	28.9	62.7
Market prices of each product (N)	2005	450	42	34	110
	2006	456	51	36.5	115
	2007	463	53	44.5	125
	2008	470	60	55	135
Marketing Margin for each product (N)	2005	266	49	25.75	32.3
	2006	269	53	25.5	34.5
	2007	272	58	26	45.5
	2008	275	61	27.5	52

Source: Survey Data 2009

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