
PREDICTING MOBILE PHONE ATTRIBUTES THAT INFLUENCE CUSTOMER SATISFACTION USING THE KANO MODEL

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ABSTRACT

The current stiff competition among firms producing similar products that serve the same purpose have brought confusion among customers on which brand to patronize. In an attempt to help customers of mobile phone make wise choice, this study examined attributes of mobile phones that influence customer satisfaction among mobile phone dealers at Kaduna central market. The study adopted a descriptive research design. The population of the study is 186. Yamane formula was used to derive a sample size of 127. Purposive sampling was used to select respondents. Primary data was collected using structured questionnaire. Data was analyzed using descriptive and inferential statistical tools with the aid of STATA. The study found that threshold attributes, excitement attribute and performance attributes of mobile phone have significant positive effect on customer satisfaction. Thus, the study recommends that manufacturing of mobile phones should adopt Kano model for measuring the satisfaction attributes of their products.

Keywords: Customer satisfaction, excitement attributes, Kano model, performance attributes, threshold attributes

INTRODUCTION

Firms today, faces many socio-political, economic, health and environmental challenges, which have negative effect on business survival and growth. Survival of a firm depends on ability to set the right business strategy. Overcoming today's challenge call to question, the ability of captain of industries to adopt the best approach that would produce good result. Several firms have gone under for adopting methods that are not in tandem with today's business reality.

Globalization has reduced the world to a global village, thus, exposing local firms to international competition. Firms which were previously protected from foreign dominance now faces tough challenges. Internationalization of market have broken down national barriers that insulate firms and their product from foreign competition, and has subdued monopoly in both developed and

developing economies. The ability of firms to overcome this competition partly depend on their wiliness to measure the attribute of their products that enhance customer satisfaction. Getting the right method or strategy to measure customer satisfaction is difficult because there are various ways or methods of measuring customer satisfaction, with each method having its own limitations.

The technology revolution has instigated mass production of similar product that serves the same purpose. This has led to confusion among customers on which product to patronize. The issue of quality of various products and the other attributes now constitutes competitive edge for firms whose product are considered to possess high quality. Customers depend on various information provided by manufacturers and also positive word of mouth from friends and associate to decide on which product or brand to purchase.

Makers of products are thus required provide some level of satisfaction to customers. This is because customer satisfaction determines sales and profit for firms. Makers of phones are thus challenged to continually add innovative features to their products, if they deliver satisfaction to their customers. Parasuraman et al. (1988) defined customer satisfaction as customer's emotional feeling of happiness after they consumed a product. Customer satisfaction is a quality management tool that can be used to ascertain customer's level of happiness and the extent to which a product meet customers' expectation. Due to this unique function of customer satisfaction in the expansion of sale, growth and overall performance of firms, various researchers have use different customer satisfaction models to predict the product attributes that influence customer satisfaction.

The study of Abosag et al. (2020) used theory of brand congruence and theory of uniqueness to unveil product attributes that contribute to satisfaction among the online communities that exist on Facebook. Also, Ali et al. (2022), Ariful et al. (2013) and Amiri and Faghani (2012) used service quality model (SERVQUAL) to predict service quality attributes that influence customer satisfaction. Furthermore, Biljana and Jusuf (2011) adopted American satisfaction model to predict service quality attribute that influence customer satisfaction. None of these studies used Kano model and also none of the models was used to predict product attributes that influence customer satisfaction. This has created a gap in contextual literature. This study opts to close this gap by using Kano model to predict mobile phone attribute that influence customer satisfaction among mobile phone dealers in Kaduna State.

This paper is divided into 5 sections. Section 1 is introduction while section 2 is literature review. Section 3 addresses the methodology while section 4 treated data analysis and interpretation. Section 5 handled the conclusion and recommendations.

LITERATURE REVIEW

Product Attributes

Attributes are features the presence or absence of which, defines an object (Mowen, 1993). Attributes may be concrete or abstract (Peter & Olsen, 1994). Concrete or physical attributes are objective and tangible characteristics of an object which can be assessed in terms of as colour or shape (Aaker et al., 1992). Abstract or pseudo-physical attributes on the other hand, represent intangible and subjective characteristics, such as design, or the operating system, that cannot be measured easily (Aaker et al., 1992). Product attributes therefore, are concrete and abstract features that define and distinguish one product from another. Product attributes provide a basis through which marketers differentiate and set their products and brands apart from those of competitors

based on a specific attributes or often several attributes or product benefits (Belch & Belch, 1995, as cited in Akpoyomare et al., 2012).

Product attributes play crucial roles in marketing both from marketers' and consumers' perspectives. Marketer and consumer have long recognized, and relied on product attributes to differentiate products and set marketers and their brands apart from competition (Akpoyomare et al., 2012). Consumers also value attributes since they are used as the basis for evaluating a product. However, the importance of product attributes go beyond physical features of a product because, consumers often link attributes to consequences of purchasing or consuming products, including certain end states or values that they intend to achieve (Akpoyomare et al., 2012; Mowen, 1993).

Literature shows several models that seek to explain what constitutes product attributes and how those attributes relate to, or affect consumer outcomes, such as satisfaction, quality perception, loyalty, preference, purchase intention, etc. American customer satisfaction model (), SERVQUAL (Parasuraman et al., 1988) and SERVPERF (Cronin & Taylor, 1992) are the commonest of these models. These models are however more suited to evaluating intangible products (service). For tangible products, other models may be more adequate. In this study, we focus on the Kano model (Kano et al., 1984) which challenges the one-dimensional view that customer satisfaction is mainly influenced by product quality. Kano et al. (1984) classified product attributes into (1) threshold attributes (TA), (2) performance attributes (PA) and (3) excitement attributes (EA) which are argued to determine customers' response and level to which a product meets customers' expectations.

Chen and Chuang (2008) held that all competitive products meet basic attributes, performance attributes and as many excitement attributes as possible. Threshold or basic attributes of a product are important but does not provide opportunity for product differentiation. Any increase on the performance of these attributes provides diminishing return in terms of customer satisfaction, however, the absence or low performance of these attributes will lead to customer dissatisfaction. In most firm, these attributes are not captured in quality function deployment because products are not rated based on threshold attributes met.

Excitement attributes are also designated as attractive attributes. These attribute represent unspoken needs which customers are unaware of. In any highly competitive market were similar products that serve the same purpose are offered to customers, the provision of a delighter (attractive attributes) that addresses unknown need provides competitive advantage to a product over other similar products. It does not cause dissatisfaction if it is not provided in a product but if present causes satisfaction and excitement.

Performance attributes describe needs that customers can define and firms can also discuss. They are specifically requested by customers. Performance attributes if met differentiate products and brands; and has linear relationship with product quality and customer satisfaction. Performance attributes may include price of product, product performance level, product features, etc.

Customer satisfaction

Customer satisfaction can be defined as a post-purchase evaluation of product given a pre-purchase expectation. Wen wu (2006) held that customer satisfaction is influence by factors such as perceived product quality, purchase experience and customer expectation. It is a means of

evaluating product quality and it is based on customer experience when they come into contact with the firm. According to Burns and Bush (2010), customer satisfaction is one of the numerous ways that firms can get feedback from customer. Firms seek customers' opinions about their perception of products and their purchase experience. The yardstick that customers employ to access their experience could be their personal goals, expectation, need and experience. These form the basis of judgement of satisfaction or dissatisfaction about a product or service.

The concept of customer satisfaction is hinged on the expectation-confirmation paradigm (Buttle, 1995, as cited in Ateke & Simeon, 2019) and is conceived as customers' positive assessment of the value they receive from the purchase and consumption of products (Amangala & Ateke, 2018) or "an individual's feeling of pleasure resulting from comparing a product's perceived performance in relation to expected (or promised) performance standards (Patterson & Walker, 2001, as cited in Ateke & Simeon, 2019). The perception of satisfaction is influenced by ideal, expected and promised standards, as well as perceived value of competitor's offerings (Agarwal et al., & 2007).

Customer satisfaction is all about relationship between customers and products on one hand and the marketer on the other hand. Customer satisfaction is one of the non-financial measures of performance. It is an effective and dynamic construct that is rooted on customer's feelings and emotions which develop over a period of time. Customer satisfaction is also an emotional and rational appraisal of customers experience base on the promises on the product attributes. Taifa and Desai (2017) classified these attributes into five quality dimensions which includes: attractive quality, one-dimensional quality, must-be quality, indifferent quality and reverse quality.

Customer satisfaction is a source of competitive advantage, as it brings measurable business benefit such as higher consumption of products, high level of customer loyalty, customer willingness to pay more for products, greater customer expectations, lower marketing costs, good organizational reputation and positive-word-of-mouth; all of which, positively influences the firm's growth and success.

Product Attributes and Customer Satisfaction

Consumers' product choice is often influenced by product attributes. Akpoyomare (2012) and Oyatoye (2011) states that product attributes also provides aesthetic and symbolic value to consumers, communicate functional features of products, emphasize ease of use, and influence product categorization and differentiation. By adequately understanding how consumer make purchase decisions and what they value in products, marketers could determine the optimum level of attributes that balance customer value expectation as a benchmark for resources allocation, as well as cost and pricing decisions (Oyatoye, 2011).

Previous studies show that product attributes influences customer satisfaction. Ali et al. (2022) examined the effect of service quality dimensions on customers' satisfaction in University Utara, Malaysia. The findings showed that reliability, empathy, tangibility, assurance and responsiveness all have positive effect on customer satisfaction. Similarly, Abosag et al. (2020) investigated drivers of customer satisfaction, using theory of brand congruence and theory of uniqueness. The results show that friends liking and similarity within Facebook positively increased members satisfaction.

Relatedly, Ariful et al. (2018) examined the relationship between the dimension of e-banking service quality and customer satisfaction; and found that reliability, efficiency and ease of use,

responsiveness, communication, security and privacy all have significant impact on customer satisfaction with reliability being the dimension with the strongest impact. In their study, Fahim et al. (2013) examined the interrelationship among service quality, customer satisfaction and customer loyalty in banking industry of Bangladesh using SERVQUAL model. The study found that customers are more or less satisfied with their banks. Also, Amiri and Faghani (2012) studied mobile banking service quality and customer satisfaction using SERVQUAL model. The findings showed that tangibles, reliability, responsiveness and empathy correlated with satisfaction while assurance has no relationship with satisfaction.

In other studies, Biljana and Jusuf (2011) measured customer's satisfaction quality using American customer satisfaction model. The study revealed that expectation was higher than perception. Fernandes and Awamieh (2005) in their study, investigated the extent of adoption by banks and determinants of customer satisfaction in United Arab Emirate (UAE). The study used the Diniz (1988) model to evaluate website of foreign and local banks. It was found that internet banking in UAE is yet to be properly utilized as a real added value tool to improve customer relationship and attain cost reduction.

In lieu of the forgoing report on the interaction between product attributes and customer satisfaction, the present study hypothesizes as follows:

- Ho₁: Threshold attribute of mobile phone has no significant effect on customer satisfaction among mobile phone dealers at Kaduna central market.
- Ho₂: Excitement attribute of mobile phone has no significant effect on customer satisfaction among mobile phone dealers at Kaduna central market.
- Ho₃: Performance attribute of mobile phone has no significant effect on customer satisfaction among mobile phone dealers at Kaduna central market.

METHODOLOGY

This study adopted descriptive research design which involved observing and describing the behavior and opinions without undue interference from the researcher. The population of the study comprised 186 mobile phone dealers in Kaduna central market, Kaduna state. A sample size of 127 was derived using Taro Yamane formula. Purposive sampling technique was used to select respondents. The reason for using purposive sampling technique is to ensure that only those who possess knowledge that will assist the study were chosen. Structured questionnaire served as instrument for primary data collection. The instrument was designed in the 5-point Likert (5=strongly agreed, 4= agreed, 3= neutral, 2= disagreed, 1= strongly disagreed). The data obtained was analyzed using both descriptive (frequency, mean score and standard deviation) and inferential (regression analysis) statistics with the aid of STATA. The following regression model was used in the study:

$$CS = (\alpha + \beta_1 TA + \beta_2 EA + \beta_3 PA) \dots \dots \dots 1$$

$$CS = \alpha + \beta_1 TA + \beta_2 EA + \beta_3 PA = e \dots \dots \dots 2$$

Where:

CS is customer satisfaction

α is the intercept

TA is the threshold attributes

EA is the Excitement attributes

PA is the performance attributes

e is the error term

$\beta_1, \beta_2, \beta_3$ are the parameter estimate

DATA ANALYSIS, RESULT AND DISCUSSION

The demographic characteristics of respondents was represented by gender, age, educational qualification, number of years in business and marital status. This is done to ensure that the sample had a true reflection of the population it was drawn from. The descriptive result for gender, age, number of years in business, educational qualification and marital style of the respondents are shown in the Table 1 below:

Table 1: Gender Distribution of the Respondents

Gender	Frequency	Percent
Male	116	91
Female	11	9
Total	127	100

Source: Researchers' field survey (2022)

Table 1 revealed that mobile phone business in the area of study is dominated by men who accounted for 91% and women 9%. This can be attributed to non-financial empowerment of women and also due to some cultural practices which does not permit women to engage in meaningful economic activities.

Table 2: Age and Number of Years in Business

Variable	Range	Minimum	Maximum
Age	46	18	69
Years	14	1	15

Source: Researchers' field survey (2022)

Table 2 showed the age of the respondents ranges from 18 to 69 years and the number of years the respondents have been in business is between 1-15 years.

Table 3: Educational Qualification and Marital Style

Educational Qualification	Marital Style			Total	percent
	Single	Monogamy	Polygamy		
Below school certificate	3	4	2	9	7
School Certificate	7	22	5	34	27
Diploma/NCE	5	49	7	61	48
BSC/HND	2	16	1	19	15
Postgraduate and above	1	2	1	4	3
Total	18	93	16	127	100

Source: Researchers' field survey (2022)

Table 3 revealed that 48% of the respondent possess national diploma and national certificate of education. 18% of the respondents possess B.Sc. / HND and above while only 34% of the

respondents have SSCE / GCE and below. The marital style of the respondents shows that 13% are polygamist and 73% are monogamist. Only 14% of the respondent are single.

To analyze the findings on the three product attributes (TA, EA and PA) of the Kano Model, respondent that strongly agreed and those who agreed were combined in one category of those who concurred with the items and have their mean value greater than 20.40 but less than 29.40 while those who neither agreed nor disagreed are said to be neutral and have their mean score greater than 15.40 but less than 20.40. Those who strongly disagreed and disagreed were combined in one category of those who opposed the items and have their mean value greater than 0 but less than 15.40. The customer satisfaction variable was also analyzed. Strongly agreed and agreed combine to represent the respondents who concurred to the items. It has a mean value greater than 25.40 but less than 39.40 while those who neither agreed nor disagreed represent respondents who are neutral and have a mean value greater than 15.40 but less than 25.40. Those who strongly disagreed and disagreed are combined together to represent respondents who opposed the items. It has a mean value greater than 0 but less than 15.40

Table 4: Descriptive Statistics on Product Attributes and Customer Satisfaction

Variable	Obs	Mean	Std. Dev.	Min	Max
cs	127	29.33858	6.873252	8	40
ta	127	23.44094	4.82989	6	30
ea	127	22.20472	5.881554	6	30
pa	127	21.5748	5.56993	6	30

Source: STATA Output (2022)

In Table 4, the threshold attributes have a mean score of 23.44 out of possible 30. This means that most of the respondents concurred with the item that say that mobile phone must have all the basic feature such as illuminated screen, operating button, sound system, call log, message center, multimedia, camera and so on. Furthermore, they agreed that mobile phones should be portable, easy to operate, provide convenience and privacy.

The excitement attributes have a mean score of 22.20 out of possible 30. This implies that most of the respondents agreed that speed, durability and ability of mobile phones to function properly all time and perform multiple task to the customer. They also acknowledge that the provision of codes which facilitate the recovery of a stolen phone can give a brand a competitive advantage.

The performance attributes have a measure of 21.57 out 30. This means that majority of the respondents sees mobile phones with dual sim, high capacity battery storage, quality camera, videos, images, internet and social media facilities and affordable price are the attribute that customers always request for and this enhances their satisfaction.

The customer satisfaction has a mean score of 29.34 out of possible 40. This shows that most of the respondents agreed that high quality mobile phone must attract customer loyalty, customer referral of the product to their friends and family members, increase in the volume of sales, low cases of after sale complaint and increase in repurchase attitude of the customers.

Table 5: Regression Analysis on Product Attributes and Customer Satisfaction

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regress cs ta ea pa
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Source	SS	df	MS	Number of obs	=	127
Model	5838.45297	3	1946.15099	F(3, 123)	=	2100.02
Residual	113.987971	123	.926731469	Prob > F	=	0.0000
				R-squared	=	0.9809
				Adj R-squared	=	0.9804
Total	5952.44094	126	47.2415948	Root MSE	=	.96267

cs	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ta	.2538318	.0965378	2.63	0.010	.0627412 .4449224
ea	.2440082	.0676736	3.61	0.000	.1100525 .377964
pa	.7537213	.077451	9.73	0.000	.6004117 .9070308
_cons	1.709002	.6009991	2.84	0.005	.5193607 2.898642

Source: STATA Output (2022)

Table 5 present the regression analysis of the explanatory variables stated in the model formulated. The dependent variable is customer satisfaction while the independent are threshold attributes, excitement attribute and performance attribute. The intercept of the model (α) which is also referred to as the autonomous is the expected value of the dependent variable (CS) when all the independent variables (TA, EA, PA) equal zero. The value is 1.709 and has a significant p-value of 0.005. This implies that customer satisfaction will be approximately 1.7 when all independent variables in the study equal to zero. Also, the probability values (F -statistic) shows significant probability values 0.0000 at 5% level of significance and f statistic stood at 2100.02. This implies that the explanatory variable (TA, EA, PA) simultaneously influence the outcome of dependent variable (CS) hence, since p-value is less than 0.05, It is therefore concluded that the model predicted the dependent variable significantly well.

Also, R^2 which is the measure of goodness of fit stood at 0.981. This implies that 98% variation on customer satisfaction can be explained by the independent variables (TA, EA, PA). Thus, the remaining 2% represent error term which are other variables which also influences customer satisfaction (cs) but was not captured in the model. The adjusted R square stood at 0.980. This indicates that 98% of the variable in cs can be predicted by (TA, EA, PA).

Furthermore, the combination of each of the explanatory variables stated in the model formulated showed that the coefficient of threshold attributes is 0.254. This implies that TA has a positive effect on customer satisfaction. Thus, holding other variable constant, a percentage increase in threshold attribute will lead to 0.25% increase in customer satisfaction. Also, the result of t-statistic stood at 2.63 (0.010) and it is highly significant at 5% significant level. Therefore, the null hypotheses which state that threshold attributes of mobile phone have no significant effect on customer satisfaction among the mobile phone dealers at Kaduna central market is therefore rejected.

The coefficient of excitement attributes stood at 0.244. This means that excitement attributes have positive effect on customer satisfaction. Thus. Holding other variables constant, a percentage increase in excitement attribute will lead to 0.24% increase in customer satisfaction. Furthermore, the result of t-statistics stood at 3.61 (0.000). This is highly significant at 5% significant level. Therefore, the null hypotheses which state that excitement attributes of mobile phone have no

significant effect on customer satisfaction among mobile phone dealers at Kaduna central market is therefore rejected.

Furthermore, the coefficient of performance attributes stood at 0.754. This implies that performance attributes have positive effect on customer satisfaction. Thus, Holding other variables constant, a percentage increase in performance attribute will lead to 0.75% increase in customer satisfaction. Also, the result of t-statistic stood at 9.73(0.000) and it is highly significant at 5% significant level. Therefore, the null hypotheses which state that performance attributes of mobile phone have no significant effect on customer satisfaction among the mobile phone dealers at Kaduna central market is therefore rejected.

CONCLUSION AND RECOMMENDATION

All the dimension of Kano model of customer satisfaction (TA, EA and PA) successfully predicted mobile phone attributes that influence customer satisfaction. Threshold attribute of mobile phone revealed that every mobile phone must have illuminated screen operating button, sound system, call log, message center, multimedia, camera, and must be easy to operate, provide convenience, comfort and privacy to its users (customers).

Also, the excitement attribute revealed that speed, durability and the ability of mobile phone to function properly all time, its ability to perform multiple task and the provision of codes that enable the customer to recover a stolen phone gives a mobile phone brand a competitive edge over its rival. Furthermore, the performance attribute of a mobile phone revealed that items such as dual sim, high capacity battery storage. High quality camera, high quality videos and images, internet connectivity, price affordability and social media facilities as specifically requested and look at for by customers. Thus, these three attributes have positive effect on customer satisfaction.

Based on the findings and the conclusion reached, the study recommends that manufacturers of mobile phone should ensure that their products have these three attributes to attract continuous patronage from customers. Firms must go beyond threshold attributes by ensuring that every brand of their product leverage on excitement attributes and performance attributes to gain a competitive advantage over other product. Manufacturing firms should adopt Kano model of customer satisfaction in measuring satisfaction attributes of their various product.

Government and policy makers should enact laws that will ensure that every mobile phone that is sold in Nigerian market must have these attributes that will give customers value for their money. Nigerian mobile phone market should not be made a dumping ground for substandard mobile phones, hence the authorities concerned with monitoring of standard of product such as SON, security agency such as Nigerian custom service must work together to ensure that only standard mobile phones are allowed into the country.

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