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Running Head: GSM Consumption Value Scale Development and Validation of Global System Mobile (GSM) Consumption Value Scale in Nigeria

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Abstract

The specific purpose of this study was the development and validation of Global System Mobile Consumption Value Scale (GSM-CVS) using Nigerian sample. To this end, 40 items were generated from literature and interviews with GSM users, items analysis through pilot study that involved 104 participants led to the dropping of 11 items that loaded below 30 thereby leaving 29 items for the main study. The scale yielded Alpha reliability coefficient of .84. Using accidental and purposive sampling techniques, a total of 763 people from both the northern and southern part of the country participated in the study. Principal Component Analysis (PCA) and Varimax with Kaiser Normalization rotation method yielded 6 factors with eighteen values greater than 1.00. The factors were found to have correlations with one another, while age differences were not found. The overall contribution of the factors was less than 10% with functional value having the greatest effect followed by health value while monetary, social, emotional and safety did not have significant effect on consumption value. In fall, it is established that this scale is a valid measure of GSM consumption value.

Introduction

The global nature of the world we now live in demands efficient and effective communication mode if things must move at the desired rate. Transactions and meetings are now possible without the participants seeing face or sitting at the conference table. Development and large scale usage of modern communication technologies are no longer the exclusive of developed nations; rather, even the less developed nations are actively involved in the communication revolution.

One communication system that has recently come to revolutionize Africa is the Global System for Mobile (GSM), this is a portable digital telephone that makes conversation possible without limitations by time and distance as long as there is network coverage. The advent of the GSM in Nigeria has drastically changed almost every facet of the people's existence, ranging from commercial to social, educational, behavioural and the value system. There appears to be a rush for everybody to be GSM "compliant", even people who can hardly afford three square meals still struggle to own a cell phone regardless of the maintenance implication. This phenomenon may be seen as a fulfillment of Town seed (2000) prediction that portable digital communication tolls with undoubtedly lead to fundamental transformations in individual's perception of self and the world.

Prior to the introduction of GSM in Nigeria in 2001, the telephone system can best be described as grossly inefficient and unappealing. At independence in 1960, the country had 18,724 telephone lines (landline) for a population of 40 million people. Between 1994-1997, the country had 4 telephone mainlines per 1,000 persons (NCC, 2003). The concern over the poor communication system and the need to make the Nigerian economy more investors oriented necessitated the action of the Federal Government to license two GSM providers to bridge the gap in the communication system.

Within a short period of the introduction of GSM in Nigeria, it made a very strong impact in the life of the nation. According to Nigerian Communication Commission-NCC (2005), subscribers to GSM are now 13.3 million people with a projection that by year 2010 the figure would have risen to 40 million people. Ndukwe (2003) reports that Nigeria has one of the highest cell phone impact average revenue per user and as emerged as the fasted growing telecommunication market on the continent of Africa. Ndukwe further states that the country has one-sixth of South Africa's GDP per capital, but the average Nigerian cell phone owner uses his/her phone five times more than the South African counterpart.

Merril (2004) reports that although the United States has 1000 times Nigeria GDP per capita, yet the revenue earned from an average Nigerian cell phone is twice that of an American user. He further states that Nigerians have one of the highest level of minute's use of phone, and that in Nigeria, the average cell phone is used 200 minutes per week, compared to a weekly usage of 154 minutes in France, 140 minutes in Japan, 120 minutes in Britain, and 88 minutes in Germany. The phenomenal growth of the GSM market, the high degree of acceptability and usage in Nigeria thus bring the question of the consumption values that Nigerians attach to the mobile phone. However, attempt to give an objective answer to that question leads to another problem, this time, the objective measurement of consumption values of mobile phone in Nigeria. Consequently, this study set out to develop and validate a scale that will objectively measure consumption values of mobile phone users in Nigeria.

Literature is replete with definitions and conceptualization of the word value. Rokeach (1973) defines value as an enduring belief that a specific mode of conduct or end state of existence is personally or socially preferable to an opposite or converse mode of existence or end state of existence. In other words, a value is a belief that is very central and shapes a person's attitudes and behaviours, it is a standard to guide actions, attitudes, comparisons, evaluation and justification to self and others. In a similar vein, Ugwuegbu (2004) states that most values are conditioned by experience, educational innovation, socialization and cultural change. He is of the opinion that, values evolves

and mature as experience evolve and mature, until they assume a status of "right", 'desirability" or "worthy" and hence become a person's values.

From the foregoing, the concept of value seems to be more enduring than the related concepts of attitude, motives, preference and interest, and as such the antecedents of an individual's values are that person's personality. Jantrania (2002) noted in his work three perspective that are frequently used when discussing the concept of value in the social sciences. These are (a) perspective of human values as end goals, (b) economics and purchasing perspective of value and (c) accounting and finance perspective of value. For the purpose of this paper however, focus is on the perspective of human values as end goals.

In the consumer/marketing psychology literature, several connotations have been used to describe value consumption. In an extensive review by Woodall (2003), the connotations listed include: Customer value, perceived value, consumption value, customer perceived value, consumer value and perceived value for money amongst others. In this paper, consumption value will be seen in the light of Monroe (1990) definition which sees the concept as buyers' perceptions of value which represents a trade-off between the qualities they perceive in the product relative to the sacrifice they perceive by paying the price.

Two theoretical approaches have been widely used in literature to explain consumption values in human societies; these are the macro research theory and the micro research theory. The Macro Research Theory is sociological in nature; it emphasizes the determination of dominant values in distinct social entities (Kahle and Kennedy, 1989). This theory is premised on the assumption that the society holds values, this means that there is homogeneity within groups. Accordingly, people within the same socio-demographic group such as cultural, nationality, gender, age or racial-ethnic groups share similar if not the same values (Oyserman and Markus, 1993). Also, it is assumed that individuals know their values orientation and are willing to express these (Manyiwa, 2005).

A major flaw with the underlining assumption of this theory is in regarding values as based on collective consciousness while ignoring individuals' freedom. In other words, the individual is seen as not capable of making decisions on his/her own, rather, he/she has to comply with societal norms (Manywa, 2005).

On the other hand, the Micro Research approach, a psychology-oriented perspective takes into account the individuals' decision-making capacity. Reynolds and Gutman (1988) and Valette-Florence and Rapacchi (1991) consider values as preferences and actions based on internalized influences, the individual perceives such internalized influence to be conducive to the maximization of his or her self-oriented welfare. The micro research approach is based on the means-end theory of Gutman (1982), it focuses on the linkage between the attributes that exist in the product (the means), the consequences for the customer provided by the attributes, and the personal values (the ends) the consequences reinforce. In other words, the individuals and not the society at large are thought of as repository of values.

Commenting on the theory, Manyiwa (2w005) says the theory conceptualizes a consumer's perceptual map, linking the perceived attributes of products and the consumer's values. This supposedly creates linkages between conceptual categories (product attributes, consequences and values, in effect, a chain links product attributes to the consequences produced by this attributes, and, in turn links these consequences with the values or end goals to which they lead. The linkages are the cognitive connections between the attributes and consequences (Reynolds and Gutman, 1988).

Manyiwa (2005), identifies a number of inconsistencies between means end theory and the associated research methods. The first of such is the inconsistency between the theoretical assumption and the methodology used in determining mean-end structures and values. For instance, Manyiwa criticized studies which were carried out to compare values orientations across nations but started by

assuming that each country involved in the study was homogeneous in terms of values of nationalities. The assumption is inconsistent with the micro perspective, rather, it is similar to the macro approach which considers value as a group's rather than individual's concept.

However, both the micro and macro approaches provide insights into the conceptualization of values. Even with differences highlighted in literature, the theories give indications as to the possible directions of future research. Moreover, it appears that both perspectives may find relevance under different situations. For instance, the micro approach may be appropriate in the western world that is more individualistic, whereas, in the other parts of the world, where socialism and collectivism are the order of the day, the macro perspective seems applicable. According to Ugwuegbu (2004), the national value orientation is a social movement, which a society embarks on when it comes to a realization that the present human behavioural tendencies, activities, and actions can not lead that country to a desirable and more prosperous immediate or future national goal.

The fore going has shown the affinity of Nigerians to their mobile cell phones and the centrality of consumption values in consumer psychology the world over. However, to be able to objectively evaluate the GSM consumption values in Nigeria, a reliable and valid measure will be of paramount importance. To this end, this study focuses on the development and validation of GSM consumption value scale in Nigeria.

Method

Participants

This is a cross-sectional survey that covered both the northern and southern part of Nigeria. A total of 763 people participated in the study using accidental and purposive sampling techniques. Four hundred and eighteen (418) were from the southern part of the country and 345 from the northern part. Overall, 462 (60.6%) of the respondents were males and 301 (39.4%) were females. Three hundred and seventy-three (49.3%) were singles while 383 (50.7%) were married. Age of the respondents ranged from 18 years to 68 years with a mean age of 31.54 and standard deviation of 8.98.

Of the respondents from the south, 253 (60.5%) were males and 168 (39.5%) were females. One hundred and seventy-two (41.2%) were singles and 245 (58.8%) were married. Age range was between 18 years and 68 years with a mean age of 32.98% and standard deviation of 9.15 on the other hand, the respondents from the north were made up of 209 (60.6%) males and 136 (39.4%) females. There were 201 (59.3%) singles and138 (40.7%) married respondents. Age range was between 18 years to 60 years with a mean of 29.79 and a standard deviation of 7.45.

Development of Measures

Items generation for the GSM Consumption Value Scale (GSM-CVS) was based on two strategies. One, 25 items were generated from literature on previous work on values (Sweeny and Soutar, 2001; Pura, 2004 and Soutar and Sweeny, 2003). Two, items were generated through pilot survey, the researchers asked people to list at least 5 items they considered as consumption values of GSM, this particular exercise yielded 15 additional items, bringing the total number of items to 40.

To determine the adequacy of the items in terms of validity and reliability, a pilot study was conducted using 104 GSM patrons in Ibadan and Lagos, cutting across the four GSM providers (MTN, Globacom, Celtel and Mtel). The pilot study yielded a Cronbach Alpha reliability increased to .84. Thus, 29 items were used in the actual study. The scale was fashioned in the Likert format with 5 point response option ranging from strongly agree, agree, not sure, disagree and strongly disagree. The maximum score obtainable is 145 while the minimum is 29.

Procedure

Trained research assistants were used in the collection of data from Ibadan (representing the South) and Markudi (representing the North). The two cities are cosmopolitan in nature and can be considered as melting points for the various ethnic and cultural groupings in Nigeria. They both house two Universities and a number of other tertiary institutions. At the point of administration, participants were assured of absolute confidentiality, pointing out to them that names are not required on the questionnaires. They were also informed that they are not under any form of obligation to participate and that they are free to withdraw at any point they feel like.

A total of 850 questionnaires were administered. Accidental and purposive sampling techniques were employed for participants' selection; one major inclusion criterion was the ownership of at least one mobile phone. Of the 850 questionnaires only 779 were retrieved at the end of the exercise, while 16 that were improperly filled were not used for the final analysis. In all, a total of 763 were used.

Result

The GSM-CVS yielded a Cronbach Alpha reliability of .84. Principal Component Analysis (PCA) and Varimax with Kaiser Normalization rotation method yielded 6 factors with eigenvalues ranging from 6.85 to 1.25 with cumulative percent variance of 60.08. Items 18, 17, 20, 16, 21 and 19 loaded on factor 1 which was labeled monetary, items 13, 14, 12, 15, 11 and 10 loaded on factor 2 and was labeled social. Furthermore, items 7, 6, 9 and 8 loaded on factor 3 and called emotional, while items 28, 27, 25, 26 and 29 loaded on factor 4 and named health. Items 1, 2, 3, 4 and 5 loaded on factor 5 with the label functional while items 23, 24 and 22 loaded on items 6 and called safety. Cronback Alpha for each of the 6 emerging factor stood at .90, .86, .83, .76, .70 and .76 respectively (See table 1).

Using the Pearson correlation matrix, the result reveals that monetary value correlates positively with social value ($r=.33$, $p<.01$), emotional value ($r=.26$, $p<.01$) and functional value ($r=.23$, $p<47$). Social value correlates positively with emotional value ($r=.47$, $p<.01$) and functional value ($r=.31$, $p<.01$) emotional value on the other hand, correlates positively only with functional value ($r=.43$, $p<.01$). Health value correlates negatively with safety value ($r=.23$, $p<01$).

Statistical analysis, this time using t-test shows there was no age difference (young versus old) in the GSM consumption values of respondents on each of the 6 factors as indicated below: Monetary $t(775) = .76$, $p<.05$, for social $t(755) = -1.24$, $p>.05$, Emotional $t(760)=-.39$, $p>.05$, health $t(747)=-.81$, $p>.05$, Functional $t(755)=-1.27$, $p>.05$ and Safety $t(758)= -1.37$, $p>.05$. (See table 2). Regression of the 6 factors against the whole scale indicated an F value of 6.13 ($p<.05$), which explained less than 10% of the variance in overall perceived value (R square .042). From the standardized beta coefficient, the following patterns emerged: (i) functional value has the strongest effect, B=-.124, t-value=-3.02, $p<.05$. (ii) health value (B=-.08, t-value=-2.00, $p<.05$). However, monetary, social, emotional, and safety values have no significant contribution on the overall perceived values (see table 3).

Discussion

The primary focus of this study was to develop and validate a scale to measure the consumption value of mobile phone users using Nigerian population. Results from the analysis indicated that the scale was both reliable and valid to measure GSM consumption values. The scale as well yielded and valid to measure GSM consumption values. The scale as well yielded 6 factors with eigenvalues of above 1.0 which gives credence to the suitability of the scale in measuring consumption values of mobile phone (Mynard and Joseph, 2000; Balogun and Olapegba, 2006). Furthermore, the analysis also revealed that the scale did not a unidimensional instrument measuring consumption values; rather, it has 6 factors as components of consumption values. These values are:

monetary, social, emotional, health, functional and safety values. The factor loadings showed that monetary value was the most heavily loaded, thereby accounting for the largest percentage of variance in the result, while the other five factors accounted for less variance.

The factors were also found to significantly correlate with one another. Specifically, monetary value correlates positively with social value, emotional value and functional value. Social value on the other hand correlates positively with emotional value and functional value, emotional value correlate positively with functional value while health value correlates negatively with safety value. Also, results showed that there were no significant age differences in the overall value consumption on one hand and on each of the factors on the other hand. In other words, both young and old people have similar degree of value for the usage of mobile telephone. This may be due in part to the fact that the mobile telephony system is a relatively new introduction in the Nigerian communication system; other studies may later look at the age implication after the system would have become a relatively permanent feature in the country.

An attempt to evaluate the percentage contribution of each of the factors to the overall consumption value revealed that the overall contribution was less than ten percent meaning that other variables not accounted for could also influence consumption value. However, the individual percentage contribution showed that functional value had the strongest significant effect. The implication of this could be that Nigerians are very much concerned about the practical or technical benefits that they can obtain using mobile phones. This also may explain why despite the high cost of maintaining a GSM line, Nigerians still patronize service companies. This finding may lend credence to the assertion of Ndukwe (2003) that Nigeria has one of the highest cell phone impact average revenue per user and as emerged as the fastest growing telecommunication market on the continent of Africa.

The finding of Elegbeleye (2005) is also a corroboration of the functional utility of mobile phone to Nigerians, he found that the prevalent use of GSM has enhanced interpersonal relationship among Nigerians, this means that the functional value of Nigerians are high and they will pay for what they consider fulfilling.

Health value also had a significant contributory effect and its significance may not be unconnected to the current sustained governmental and non-governmental campaigns on HIV/AIDS coupled with the unsubstantiated reports and assumptions on the impact of radiation from mobile phones on the users. Thus, it becomes important for the users of mobile phone to be made aware of possible negative effect of high doses of radioactive emission if any. Manufacturers of mobile phones could also invest more in research to ascertain the health risks that may be associated with usage of mobile phone and how the risks can be minimized. Government on the other hand should look into the possibility of legislating against the importation of phones which do not meet the minimal level of radioactive emissions.

Conclusion

This study has led to the development and actual validation of a scale to measure the consumption values of mobile phone users in Nigeria which can also be adapted for use in other country if culturally validated to suit the setting. It has also shown the direction of the values Nigerians have regarding their mobile phones and that there is no age difference in consumption values of mobile phone users in Nigeria. It is suggested that this work be seen as an initial step in the study of consumption value in Nigeria, thus further research can be carried out to confirm the findings and also to look at some sociodemographic variables that can influence consumption values of mobile phone users.

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Table 1

Varimax-Rotated Factor Loadings (Component Matrix) for the GSM-CVS

Items	Monetary	Social	Emotional	Health	Functional	Safety
18	.85					
17	.84					
20	.81					
16	.79					
21	.76					
19	.74					
13		.83				
14		.80				
12		.77				
15		.73				
11		.68				
10		.53				
7			.82			
6			.75			
9			.70			
8			.65			
28				.80		
27				.79		
25				.74		
26				.66		
29				.54		
1					.70	
2					.67	
3					.65	
4					.63	
5					.45	
23						.86
24						.78
22						.77
Eigen Values	6.85	3.06	2.72	1.94	1.61	1.25
% of Variance	23.62	10.53	9.38	6.67	5.57	4.31
% Cummulative	23.62	34.16	43.53	50.21	55.77	60.08

Table 2

t-test of independent means for all respondents on the 6 factors.

Value	Age group	N	Mean	S.D.	df	t	p
Monetary	Young Old	414 343	17.74 17.41	5.71 6.18	755	.76	.05
Social	Young Old	415 342	21.30 21.74	4.85 4.91	755	-1.24	>.05
Emotional	Young Old	417 345	15.59 15.67	3.02 3.20	760	-.39	>.05
Health	Young Old	408 341	14.10 14.33	4.09 3.76	747	-.81	>.05
Functional	Young Old	414 343	20-.19 20.47	3.04 2.99	755	-1.27	>.05
Safety	Young Old	416 344	12.35 12.62	2.82 2.64	758	-1.37	>.05

Table 3

Summary table of multiple regression analysis showing the main and joint contributions of the 6 factors on the overall cvs measure

Value	Beta coefficient	t	P	R	R 2	A dj.R2	F	
Monetary	-.06	1.59	>.05					
Social	-.07	-1.50	>.05					
Emotional	-.04	-.84	>.05	.2 2	. 05	.0 4	6. 13	.05
Health	-.08	-2.00	<.05					
Functional	-.12	-2.02	<.05					
Safety	-.007	-.18	>.05					