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# RURAL AND ETHNIC YOUNG CONSUMERS' PERCEPTIONS OF BUNDLED CELLULAR TELEPHONE FEATURES

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## ABSTRACT

*Useable questionnaires were completed and returned by 351 (174 rural and 177 HBCU) consumers at two Midwestern universities. ANOVA tests revealed young consumers' perceptions of the importance of cellular telephone features were significantly different between rural and HBCU (Historic Black Colleges and Universities) young consumers, males and females, and among age groups ( $p < .01$ ;  $p < .001$ ). Furthermore, regression analysis revealed among ten features young consumers reported available on the phones they owned, demographic variables were significantly predictive ( $p < .001$ ) of perceptions of importance of bundled features. Recommendations were proposed that could help marketers develop strategic marketing mixes of phone features targeted to young consumers, rural or HBCU.*

## INTRODUCTION

Executives seeking marketing strategies to retain or gain market share in the highly competitive cellular telephone business need to understand young consumers' perceptions of the importance of bundled features on the cellular telephones (phones) they sell. One approach to seek a market advantage is to segment the market to identify segments for which the product may be preferred. For example, a marketer seeking to expand cell phone business among rural and ethnic young consumers might wish to explore the environments where these populations congregate naturally: small-town universities, in particular, Historic Black Colleges and Universities (HBCU) for high concentrations of young ethnic consumer populations. The following questions might be raised: Are demographic variables in any way predictive of the bundled features young consumers perceived important? Does the combination of cellular telephone features make a difference to young consumers in rural or HBCU markets? Can pre-existing phone features present on the phones young consumers already own be used to predict their perceptions of the importance of bundled

phone features? This study was conducted at two Midwestern universities, with limitations, in order to answer these and related questions.

### **A Few Limitations**

This paper is a market segmentation study for the cell phone industry. There were limitations. The independent variables (cell phone features and demographic characteristics) cannot be construed as having a causal effect on the dependent variables (perceptions of the importance of cell phone features); meaning, cell phone features are not causative influencers on perceptions of the importance of features. Populations are assumed normally distributed. Only two universities were selected for the study, thus, generalizing results to any aspired population is cautioned against. There are nearly 100 cell phone features available on a number of brands and only ten features were analyzed in this study. These features were identified by a focus group of college students; therefore, a set of ten different features might generate different results if this study were replicated in the future. Another consideration not evaluated was the impact of intensity of competition prevailing in each market area. Despite this study's limitations, young consumers' use of cell phones has been explosive warranting empirical investigation.

### **The Cell Phone Industry**

The explosive growth in the use of cellular telephones is well documented (Anderson and Jonsson, 2006; Joseph and Prakash, 2006). Eighty percent of Americans subscribe to a wireless service; ninety-nine percent of the U.S. population has access to at least one mobile carrier (Albanesius, 2008). McCasland (2005) believes young consumers aged between 18 and 22 are often the architects of change in the US culture. Cellular telephones have changed the US culture, and they have become a ubiquitous commodity. Thus, cellular telephone marketers must continue to change their strategic foci from routine product differentiation strategies (Reiner, Natter, and Spectrum, 2007).

Globally, cellular telephone use is also pervasive (Chintagunta, and Desiraju, 2005; Joseph and Prakash, 2006; Landale, 2006; Miller, 2006). Nokia predicted that by 2010, world-wide usage of mobile phones will reach three billion users (Associated Press, 2005). Cellular telephones have developed beyond basic voice communication. Wireless carriers routinely offer additional features such as instant messaging, video, camera and music players. The CW network has partnered with Sprint to launch a mobile series spin-off from its drama, *Smallville*, with the aim of reaching their young core audience (Shields, 2007).

Cellular phones have always been used for communication, but they are used for online social networking as well. One of the most popular uses of the computer by college students, other than for class assignments, is accessing MySpace (with over 110 million users) and/or Facebook

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(with 70 million users). AT&T, Sprint Nextel, and Verizon Wireless have started a service that will allow users to post messages on Facebook's home pages or search for other users' phone numbers and e-mail addresses from a cellular telephone. MySpace has a pact with Hello, a wireless joint venture between SK Telecom and Earthlink, that will allow users to send photos and update their blogs or profiles by cellular telephone (Knowledge@Wharton, 2006). Sprint Nextel internet-accessible phones now have access to MySpace Mobile (MSM), the "first free direct access" to MSM through a U.S. wireless carrier, providing a rich set of features now available on a mobile device (Kansas City Business Journal, 2008).

In addition to accessing the Internet, watching TV, and sending text messages, cellular phone users can also use their phones for mobile banking. Bank of America allows its customers to access locations of ATM and banking centers using their mobile phone browsers and can receive e-alerts as either an e-mail or text message. Free mobile banking service became available in 2007. Its online banking customers with mobile internet access can use their cellular telephones and smart phones to pay bills, transfer money and check account balances. Currently, more than 85% of cellular telephone subscribers can access mobile Internet (Bank of America, 2007).

In fact, the cellular telephone may one day replace the wallet. Japan is a forerunner in this area. In Japan, E-cash is accepted in stores and restaurants, allowing shoppers to carry nothing but their cellular telephones, which transmit infrared signals. Value is added to phones at automated docking stations where paper money is inserted and credit for E-cash is added to the phones (Failoa, 2005). Japan's top mobile phone operator (NTTDoCoMo) and McDonald's Japan have announced an agreement to jointly promote e-marketing based on e-wallet services through an upcoming joint venture which will include mobile-phone credit cards (Cellular News, 2007). The rapid pace of strategy changes among cell phone competitors is evidenced in the literature.

## LITERATURE REVIEW

At the beginning of the twenty-first century, researchers were just beginning to focus on the importance that wireless and 3G technologies would play in business and marketing. Wireless and radio technologies were predicted to be at the heart of many business activities (Manning and Cosier, 2001). Access and usage prices were found to have different relative effects on demand and retention (Danaher, 2002).

By 2005 researchers began to focus on the application of wireless technology. The difference between "pushing" information onto consumers through wireless media devices such as cellular telephones and "pulling" information from consumers was examined (Hosoe, 2005). This paper introduced an alternative use of cellular telephones-the capturing of scenes of ongoing consumption moments by using a Web-based database system, which could lead to a better understanding of consumer behavior. Inspired by a unique data collecting process termed as the Experience Sampling Method, the study developed a system for recording its informants' consumption as "data in

progress." Text and image data are recorded with internet accessible cellular telephones, wirelessly transmitted to a database, and used for real-time analysis by an observer group.

One study in 2005 examined the relevance of mobile phone technology in marketing to young consumers aged between 18 and 22; these are the millennials who are heavy mobile phone users and often the architects of change in US culture (McCasland, 2005).

A study of mass customization strategies (MC) by Sigala in 2006 revealed that MC strategies that are customer centered are vital, as users of customized mobile phone services perceive both "give" and "get" customer value dimensions. As MC does not come for free, to persuade customers to get involved and invest time and effort in value chain operations for designing customized services, companies need to identify and provide enhanced customer values. Research findings have great implications in the new service development processes and marketing - communication strategies of mass customizers. Findings help practitioners increase the adoption and use of mass customized mobile phone services by providing insight on how to develop MC strategies from a customer-centric perspective and conduct a customer value-based market segmentation for enhancing marketing effectiveness and MC customer adoption.

Another study (Shim, Ahn, and Shim, 2006) presented an overview of digital multimedia broadcasting (DMB) and explored the users' perception on DMB cellular phone or "cellevision", video-on-the-go services that deliver television to cellular telephones. The authors concluded that the millennial generation will have a major impact on the DMB market due to their mindset and lifestyle.

Other applications of cellular phones were examined. Next to television sets and computer monitors, today's mobile telephones offer a "third screen" that delivers information, entertainment, communication, and even transactional services to an increasingly mobile society (Sylvia and Chan-Olmsted, 2006).

After receiving institutional permission to conduct this study, social science methodology and traditional multivariate statistics were used to reject or not reject three statistical null hypotheses.

## **HYPOTHESES**

This study investigated if demographic variables or if telephone features included on phones students already owned were predictive of young consumers' perceptions of bundled features. In addition, this study set out to determine if there were any significant differences in students' perceptions of bundled features across demographic variables (rural vis-à-vis HBCU, gender, grade level, cellular telephone brand, major, and age). The formal hypotheses were stated as follows:

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*Hypothesis <sub>1</sub>: Young consumers' demographic characteristics are not predictive of their perceptions of the importance of bundled cellular telephone features.*

*Hypothesis <sub>2</sub>: The ten telephone features included on phones young consumers already own are not predictive of their perceptions of the importance of bundled cellular telephone features.*

*Hypothesis <sub>3</sub>: There is no statistical difference among the means of young consumers' demographic variables (rural vis-à-vis HBCU, gender, business or non-business major, grade level, age, monthly billing, or minutes use per month) and their perceptions of the importance of bundles of cellular telephone features.*

Methods common in the social science literature were used to analyze the data. The descriptive statistics were compiled and some descriptive variables were further analyzed with a non-parametric test. Chi-Square is used traditionally to help the researcher determine the likelihood of the occurrence of an event; a classic textbook example is a researcher wanting to know the weapon of choice for women who commit murder. It might be helpful to cell phone marketers if they could somehow predict the likelihood of male or female or rural or HBCU young consumers' likelihood of owning a particular brand of cell phone. Furthermore, the three null hypotheses were tested using multivariate statistics.

### **Purpose behind Using Multiple-Regression and Factor Analysis**

Darlington (1968) provides perhaps the most comprehensive overview and justification for using multiple-regression analysis in psychological research. When the researcher cannot administer a treatment to the independent variable or groups of independent variables regression is typically used as statistical control substituted for procedural control. The purpose behind the use of multiple-regression in this study is the statistical control of all the possible ways in which young consumers who own cellular telephone features differ from those who do not in ways specifically related to young consumers' perceived importance of features they own. Demographic variables and cell phone features are possible correlates to the dependent variable (perception of the importance of cell phone features) and thus employed as independent variables. The idea is to control confounding variables, or for alternative explanations by variables directly correlated to the dependent variable. In this case, multiple-regression is a robust technique.

Many construe Likert-type data to be ordinal data because it is difficult (if not impossible) to determine the equality of gradation (1 = not important to 3 = very important) in perception or

attitude measures; however, Likert-type data are often used in factor analysis and in multiple-regression analysis. Kachigan (1991) believes at a minimum Likert data is “quasi-interval” scale data. Psychologists tend to use Likert-type measures as if they were interval level data, and this is a common practice in psychological research. Furthermore, researchers often need to reduce the number of variables they analyze.

Some personality surveys might contain 100 continuous response items, an impractical number of items to manage. Factor analysis is perfectly suited for data reduction purposes because the derived factors explain most of the variance; for example, researchers might be able to reduce 100 continuous response items on a perception survey to perhaps four or five factors that explain 70 percent of the variance. This common practice is reinforced by Ferrando (1999) who compared Likert scaling using continuous, censored, and graded response models and found no significant different effects on criterion-related validity, including a multiple linear factor analysis model; in addition, more complex models in that study did not improve predictive validity of the models.

Therefore, the data collected for this study were analyzed with methodology consistent in the literature to address the aforementioned three null hypotheses.

## METHODOLOGY

### Survey and Sample

A convenience sample of millennial users was surveyed from a total population of 2,072. The survey, in which young consumers were asked to rate various features on cellular telephones and report demographic information, was conducted at a rural Midwestern university from a population of 872 business students; there were 174 students selected from the rural university. The survey was also conducted at an HBCU (Historic Black Colleges and Universities) university located in the Midwest from a population of 1,200 business students. There were 177 students selected from the HBCU. The classroom sample selected from a population of 2,072 resulted in 351 useable surveys. Brand of cellular telephone ownership, monthly usage, gender, HBCU vis-à-vis rural, age, major, grade level, and monthly billing options were compared (using ANOVA tests and regression analyses) against millennial users’ ratings of the importance of various features to determine if significant differences existed. Ten items were measured using a Likert-type scale (0 = not important to 3 = very important) to assess young consumers’ perceptions of the importance of selected cellular telephone features. These selected telephone features were further analyzed relating to the presence of these features on their existing cell phones.

## Descriptive Statistics

There were 351 completed useable questionnaires. The statistical analyses presented in this study were based on those 351 observations. The frequency and percent of brands of cellular telephones owned by young consumers, their billing habits, and monthly minutes used, and the features they reported available to them on the phones they owned are presented in Tables 1, 2, and 3 below:

Telephone Brand	Frequency	Percent
Other Brands	153	45.4
Motorola	118	35.0
Nokia	57	16.9
AT&T	7	2.1
Panasonic	2	0.6
Totals	337	100%

Demographic	Monthly Billing	Monthly Minutes	Monthly Billing Mean	Monthly Minutes Mean
Rural	\$8,892	49,157	\$54	294
HBCU	\$12,776	58,595	\$76	337
Total	\$21,668	107,752	\$65	316
Male	\$10,831	52,791	\$64	305
Female	\$10,458	52,359	\$67	325
Total	\$21,289	105,150	\$65	316

One hundred seventy-seven males and 166 females (reporting gender) completed the questionnaire. Among the age groups, 95 respondents were age 20, 193 respondents were age 21 years old, 27 respondents were age 24 years old, and 29 respondents were age 26 years old. Eighty-four percent of the respondents reporting age (288/344) in this study were within the range McCasland (2005) labels “millennial users”: young consumers aged between 18 and 22.

**Table 3: Rural & HBCU Telephone Features Frequency Reported by Percent**

Feature Name	N	With Feature	Rural Frequency	%	HBCU Frequency	%
Game	337	233	96	41.2	137	58.8
Free minutes	336	305	146	47.9	159	52.1
Instant messaging	336	264	117	44.3	147	55.7
Warranty	334	274	141	51.5	133	48.5
Hands free	330	174	65	37.4	109	62.6
Earpiece	331	155	45	29.0	110	71.0
Internet connection	336	220	92	41.8	128	58.2
Intercom availability	326	135	32	23.7	103	76.3
Digital camera	333	129	24	18.6	105	81.4
Email access	334	158	42	26.6	116	73.4

\*Denotes 10 pre-existing features students indicated they had available to them on the 337 phones they owned

There were 273 business majors and 71 non-business majors. There were 56 freshmen, 75 sophomores, 131 juniors, 56 seniors, and 23 graduate students. A Chi-Square test was run on the nominal variables to test for significant relative frequencies between rural and HBCU student across brand of cellular telephone ownership; furthermore, gender and brand of cellular telephone ownership was tested using the Chi-Square. No significant difference existed between males and females and brand of cell phones they owned with a critical value of 3.623 being smaller than the 13.277 critical value found in the Chi-Squares table.

**Table 4: Chi-Square Test of Male Female & Rural HBCU vis-à-vis Brand Ownership\*\*\***

Demographics	Others	AT&T	Motorola	Nokia	Panasonic
Male	73(77.7)	4(3.1)	60(60.1)	32(29.0)	2(1.0)
Female	77(72.3)	2(2.9)	56(55.9)	24(27.0)	0(1.0)
Rural	53(74.9)	2(3.4)	70(57.8)***	38(27.9)	2(1.0)
HBCU	100(78.1)***	5(3.6)	48(60.2)	19(29.1)	0(1.0)

\*\*\*Denotes  $p < .001$ ; parentheses ( ) denotes expected count.

On the other hand, the Chi-Square test suggested rural and HBCU young consumers differed significantly in their choice of cellular telephone brand, with a critical value of 28.025 being larger than the 13.277 critical value found in the Chi-Square Table, with  $df = 4$  and  $p = .000$ . Motorola was significantly different in its relative frequency between rural and HBCU users. Rural users clearly



favored the Motorola brand as compared to HBCU cell phone owners. Chi-Square findings are presented in Table 4. The implication of this difference will be discussed in a later section.

### RELIABILITY TEST

The overall scale reliability for this study using a Chronbach's (1984) alpha is 0.76, which exceeds the Nunnally (1978) criteria of 0.70 for an acceptable alpha. Devellis (1991) says an alpha "between .70 and .80" is respectable (1991: 85). The reliability did not improve if any item were deleted; therefore, the entire ten item scale was left intact for data analysis. A factor analysis was conducted after testing and accepting the instrument's respectable alpha reliability.

### FACTOR ANALYSIS

Three hundred thirty students' responses to the items were subjected to an un-rotated principal component analysis, with a scree plot suggesting four factor be derived (in SPSS 15.0). Four factors were suggested by the scree plot. Those four factors explain 67.23% of variance after rotation (Factor 1 = 26.00%, Factor 2 = 19.77%, Factor 3 = 10.78%, and Factor 4 = 10.68%, respectively). Principal Component Analysis was used with Varimax Rotation to extract the four factors, as shown in Table 5. The four factors were produced with 5 iterations.

A variable was said to load on a factor if it had a component loading of .50 or higher on that factor and less than .50 on any other factors (Devellis, 1991; Hatcher, 1994). The derived factors were indicative of the utility of features available on the phones millennial users owned; thus, each of the derived factors represents a bundle of features pertaining to a user's perceptions. Factors 1, 2, 3, and 4 were subsequently labeled according to consumers' perceptions of the importance for bundled features and those features' obvious utilities: 1) E-Communications, 2) Safety, 3) Game Value, and 4) Free Minutes. To ascertain if there were any significant differences in students' perceptions among the demographic variables (grade level, declared major, age and gender) data were further analyzed using traditional multivariate statistical methods to test the null hypotheses.

Features	Component Loadings (Cellular Features)			
	Factor 1: E-Communication	Factor 2: Safety	Factor 3: Game Value	Factor 4: Free Minutes
Email importance	.847	.055	-.017	-.073
Intercom importance	.799	.223	-.013	-.095
Digital camera importance	.709	.134	.125	.100
Instant messaging importance	.667	.062	-.075	.173

**Table 5: Principal Component Factor Analysis of Cellular Phone Features\***

Features	Component Loadings (Cellular Features)			
	Factor 1: E-Communication	Factor 2: Safety	Factor 3: Game Value	Factor 4: Free Minutes
Hands free importance	.072	.879	-.061	.031
Ear piece importance	.157	.852	-.008	-.113
Internet importance	.457	.519	.204	.097
Warranty importance	.144	.228	-.770	.256
Game importance	.192	.281	.646	.276
Free minutes importance	.038	-.059	-.026	.921

\*Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization; a Rotation converged in 5 iterations.

## RESULTS

Stepwise multiple-regression analyses of demographic variables on all four factors (as criterion/dependent variable one at a time) were run, since cumulatively they account for 67 percent of the variance explained: 1) brand, 2) campus, 3) major, 4) grade level, 5) gender, 6) monthly billing, 7) age, and 8) minutes used per month were used (dummy codes were necessary) as predictor/independent variables on tests. In addition, predictor variables were checked for multicollinearity; in SPSS 15.0 a Collinearity Diagnostic was run on the data and no independent variable had a condition index above 6.0 and no two pre-existing cell phone features shared variance proportions above .50. A condition index of 15 indicates possible collinearity problems and an index over 30 suggests serious collinearity problems (Belsley, Kuh, and Welsch, 1980). Therefore, multicollinearity was not a problem for the data in this study in any of the four regression models because no condition index exceeded 15. The sample size of 351 for this study was considered to be adequate (Knofczynski and Mundfrom, 2008).

**Table 6a: Stepwise Multiple-regression Models – Factors 1, 2, 3, & 4\***

Demographic Variables	Stepwise Multiple-regression on Demographics					
	Adjusted R <sup>2</sup>	R Square Change	Sig. F Change	t statistics	Beta	Sig.
<b>F1: E-Communication</b>						
Rural/HBCU	.140	.143	.000***	5.577	.327	.000***
Gender	.174	.031	.001**	-3.457	-.185	.001**
Billing	.198	.024	.004**	2.829	.166	.005**
Grade Level	.199	.012	.041*	-2.051	-.110	.041*

Samples: N=283		Stepwise Multiple-regression on Demographics				
Demographic Variables	Adjusted R <sup>2</sup>	R Square Change	Sig. F Change	t statistics	Beta	Sig.
<b>F2: Safety</b>						
Rural/HBCU	.090	.094	.000***	5.336	.302	.000***
Gender	.100	.013	.044*	2.024	.114	.044*
<b>F3: Game Value</b>						
Brand	.015	.018	.022*	2.299	.136	.022*

\* Denotes p<.05; \*\*denotes p<.01; and \*\*\*denotes p<.001; Factor 4 was non-significant.

Therefore, Hypothesis 1 was rejected for factor 1; the school, gender, billing, and grade level variables were predictive of young consumers' perceptions of the importance of E-Communications cellular telephone features. Results are shown in Table 6a. Hypothesis 1 could not be rejected for factor 4 because none of the eight demographic variables were predictive of that factor. The results will be discussed later.

On the survey instrument, students were asked to indicate if a feature were available on the cellular telephone they owned (0= No, I do not own this feature and 1 = Yes, I do own this feature). Thus, a dummy code pre-existed in the data allowing ten variables to be tested in a regression model against all four bundled phone features (E-Communication, Safety, Game Value, and Free Minutes). Those pre-existing features were: 1) game, 2) free minutes, 3) instant messaging, 4) warranty, 5) hands-free device, 6) earpiece, 7) internet access, 8) intercom, 9) digital camera, 10) email access.

Samples: N=290		Stepwise Multiple-regression on Cell Phone Features				
Demographic Variables	Adjusted R <sup>2</sup>	R. Square Change	Sig. F Change	t statistics	Beta	Sig.
<b>F1: E-Communication</b>						
Email	.187	.190	.001**	3.279	.215	.001**
Digital Camera	.253	.068	.000***	4.894	.275	.000***
Internet	.262	.012	.033*	2.035	.121	.043*
Instant Messaging	.270	.010	.045*	2.013	.110	.045*
<b>F2: Safety</b>						
Earpiece	.168	.171	.000***	4.593	.281	.000***
Hands Free	.205	.040	.000**	2.772	.182	.006**
Intercom	.223	.013	.032*	2.156	.127	.032*
<b>F3: Game Value</b>						
Warranty	.079	.082	.000***	-4.949	-.279	.000***
Game	.102	.027	.004**	2.923	.163	.004**

Samples: N=290	Stepwise Multiple-regression on Cell Phone Features					
Demographic Variables	Adjusted R <sup>2</sup>	R. Square Change	Sig. F Change	t statistics	Beta	Sig.
<b>F4: Free Minutes</b> Free Minutes	.102	.105	.000***	5.810	.324	.000***

\* Denotes p<.05; \*\*denotes p< .01; and \*\*\*denotes p<.001.

A stepwise regression analysis on factors 1, 2, 3, and 4 (as criterion/dependent variable one at a time) was run since cumulatively the four factors account for 67 percent of the variance explained. The ten pre-existing phone features were used as predictor/independent variables in these tests. The stepwise regression revealed owning a phone with an available feature was significantly predictive of students' perceptions of the importance of that feature. Thus, we reject hypothesis 2.

At least one of the ten dummy coded pre-existing phone features was predictive of at least one of the four factors (E-Communication, Safety, Game Value, and Free Minutes) in the stepwise regression models. Stepwise regression results (R Square Change and Significant F Change) can be seen in Table 6b. It is obvious that owning a feature is significantly predictive of the perceived importance of that same feature. In addition, cell phone owners reporting the game feature were: Others 98, AT&T 6, Motorola 79, Nokia 46, and Panasonic 2; cell phone owners reporting owning a warranty were: Others 127, AT&T 3, Motorola 95, Nokia 47, and Panasonic 1. It is no wonder the rural young consumer favored the Motorola brand.

Although multiple-regression analysis is a very useful tool in helping researchers determine the predictive nature of variables (Darlington, 1968), a need still existed to determine the significant difference between and among means for groups being compared. Therefore, One-Way ANOVA tests were run on the four derived factors and each of the independent variables consumers reported in the survey. Results are presented in Table 7.

Hypothesis 3 was rejected because there were statistically significant differences among the means of young consumers' demographic variables (rural vis-à-vis HBCU, gender, and age) and their perceptions of the importance of bundled phone features. Hypothesis 3 could not be rejected for major, class rank, and cell phone brand ownership.

Hypothesis 3 was tested using One-Way ANOVA, and a significant difference between means for rural and HBCU consumers and their perceptions of the importance of phone features was revealed; therefore, we rejected null hypothesis 3. A significant difference was found to exist between the means of rural and HBCU with a p=.000. The mean for rural and HBCU consumers on factor 1 (E-Com) was -.34 and .36 respectively. Rural consumers cared less about email, internet, and digital cameras on their phones than did HBCU consumers. A significant difference was found to exist between the means of rural and HBCU with a p=.000 on factor 2 (Safety). The mean for rural on factor 2 was -.29 and .31 respectively. Rural consumers and HBCU consumers had an

inverse perception of the importance of safety features and rural users seem less concerned about hands free, earpiece, as cell phone features. This difference between groups could be due to availability and variety of phones, number of tickets received for speeding, etc.

**Table 7: One-Way ANOVA Tests for Independent Variables on Four Factors**

Source	Sum of Squares	df	Mean Square	F	Sig.
Rural/HBCU Factor 1 <b>E-Communication</b>	Between 37.398 Within 267.602 Total 305.000	1 304 305	37.398 .880	42.485	.000***
Rural/HBCU Factor 2 <b>Safety</b>	Between 27.453 Within 277.547 Total 305.000	1 304 305	27.453 .913	30.069	.000***
Gender Factor 1 <b>E-Communication</b>	Between 7.739 Within 294.341 Total 302.080	1 297 298	7.739 .991	7.809	.006**
Gender Factor 2 <b>Safety</b>	Between 5.192 Within 295,501 Total 300.692	1 297 298	5.192 .995	5.218	.023*
Age Factor 1 <b>E-Communication</b>	Between 11.553 Within 287.969 Total 299.522	3 297 300	3.851 .970	3.972	.008**

\* Denotes  $p < .05$ ; \*\*denotes  $p < .01$ ; and \*\*\*denotes  $p < .001$

Male and female consumers differed significantly ( $p = .006$  and  $.023$  respectively) on factor 1 (E-Communication) and factor 2 (safety) with factor means of .15 and -.17 and -.14 and .13 respectively. Males and females had inverse perceptions of the importance of E-Communications and safety features. Women had a higher perception of the importance of cell phones with email, internet, and digital camera features than men. However, on safety women had a lower perception of cell phones with earpiece and hands free than men.

Among the means for age groups, a significant difference of .008 exists on factors 1. On E-Communications, a Tukey's post-hoc test revealed 20 and 21 year-olds differed with 26 year-olds on Safety with means of .15, -.02 and -.64 respectively. Twenty-six year-olds had lower perception of the importance of E-Communications (Factor 1); perhaps they have less time to engage in phone activities requiring such features.

## DISCUSSION

Cellular telephone features were analyzed using the traditional multivariate techniques with a significance level of .05. The selected telephone features pre-existing on phones young consumers owned were examined regarding their ability to be used as predictors of perceptions of the importance of these types of features. Student phones and how the students evaluated the feature in terms of importance of features was measured with a Likert-type scale (0= not important to 3=very important).

It was revealed that location was a significant factor in choosing the brand of cell-phone. Rural students tended to choose the “Motorola” brand as compared to the HBCU students. Data were not available to discern weather this was a result of “availability” or “preference”.

The analysis of the data revealed an opportunity to “bundle” cell-phone features as marketing strategy to differentiate product in the marketplace. The bundle identified and their components were:

<b>Table 8: Bundle Components</b>	
<b>E-COM</b>	
	E-mail Capability
	Internet Capability
	Digital Camera
	Instant Messaging Capacity
<b>SAFETY</b>	
	Hands Free Operation
	Earpiece
	Intercom Capacity
<b>GAME VALUE</b>	
	Game Capability
	Warranty Availability
<b>FREE MINUTES</b>	
	Free Minutes

## CONCLUSION AND RECOMMENDATIONS

The market for cellular telephones is saturated; nearly nine of ten university students reported cellular telephone ownership. As cellular telephone providers compete in the market place,

it is logical they will attempt to differentiate their products based on “product features.” This study focused on university students at rural and HBCU universities.

Mass customization strategies that are consumer centered are vital since users of customized mobile phone services perceive both “give” and “get” customer value dimensions. As mass customization does not come free, to persuade customers to get involved and invest time and effort in value chain operations for designing customized services, companies need to identify and provide enhanced customer values (Sigala, 2006). This study was directed toward cellular telephone users to identify and isolate their cellular telephone ownership, use and evaluation of selected cellular telephone features. The study revealed many segmentation factors on which the cellular telephone market might be segregated to better serve the saturated market. A summary of the findings that may help in identifying combinations of segmentation factors is presented in table 9.

1.	HBCU students evaluated the E-COM bundle higher than did RURAL students
2.	HBCU students evaluated the SAFETY bundle higher than did RURAL students
3.	FEMALE students evaluated the E-COM bundle higher did MALE students
4.	MALE students evaluated the SAFETY bundle higher than did FEMALE students
5.	The students aged 20/21 evaluated the E-COM bundle higher than did OLDER students

These findings will allow marketers of cellular telephones to review their marketing strategy as related to the method and basis for market segmentation they use. There is opportunity to segment based on gender in marketing cellular telephone features since males tended to evaluate telephone features higher than females.

Segmentation based on age should be fruitful. Targeting younger buyers by emphasizing the importance of cellular telephone features, especially those relating to the E-Commerce bundles should be successful. It was also noted that there was a significant difference in the attitudes and needs of the “rural vs. HBCU” students. The rural students placed a lower value on features such as e-mail, internet and digital cameras. This may be a result of the availability of “wide band” in rural areas or it may be differences in communication and social needs. There may be an opportunity to combine bundles to further segment the market for rural to HBCU. Younger females may be a target for E-Commerce bundle.

A major finding of this study was the students who had specific features on their cellular telephones tended to rate that features higher than those who did not have the feature. A marketing implication of this finding is marketers should design programs that allow buyers to experience each product feature for a short time as a “trial” with the expectation that the buyer would evaluate the feature higher after the “trial” and would be more likely to purchase. Since the earpiece was a predictor of the “safety” factor there appear to be many opportunities to market cellular telephones

with the safety feature and differentiate their offering based on the safety feature. Marketers could differentiate the feature based on ease of use, appearance, size etc. to gain a differential advantage.

The domestic market for cellular telephones is generally considered to be approaching saturation which means competitors in the market can no longer expect growth by marketing to non-users. The normal response to marketing in saturated markets is to add value to the product by “line extension”, i.e., adding new features to the existing product or “product development”, replacing the old product with one which includes these new features. Either approach requires an appreciation of the value placed on each feature by consumers. Of course the cellular telephone market is in constant change similar to other electronic products, thus, marketers should constantly review buyers’ attitudes, opinions and values regarding changing cellular telephone features.

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