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Understanding Student Attitudes of Mobile Phone Applications and Tools

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UNDERSTANDING STUDENT ATTITUDES OF MOBILE PHONE APPLICATIONS AND TOOLS: A STUDY USING CONJOINT, CLUSTER AND SEM ANALYSES

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Abstract

Mobile phone use has grown dramatically throughout the world. While researchers have explored various facets of use and perceptions across age groups, genders and nationalities, segmentation by utility of mobile phone attributes has received little attention in academic research. Further, understanding how antecedent of attitudes differ by utility-based consumer segments has been underexplored. This research helps to fill these gaps by presenting a holistic view of mobile phone user preferences and perceptions among university students by applying methodologies from the marketing and information systems domains. Conjoint analysis provides insights into how students value various mobile phone applications and tools. Cluster analysis extracts salient and homogenous consumer segments from the conjoint analysis output. Structural equation modelling (SEM) then explores how antecedents to attitude may differ by the elicited consumer segments found through the cluster analysis. Implications of this work for theory and practice are presented.

Keywords: mobile phone, attitude, conjoint analysis, cluster analysis, SEM analysis.

1. INTRODUCTION

Mobile phone use has been growing dramatically over the last decade. In Canada, 74.3% of households own at least one mobile phone (Statistics Canada 2009), with the number of mobile phone subscribers increasing by 91% from 2000 to 2005 (Industry Canada 2006). While mobile phone use has been increasing in all economic and age sectors, undergraduate university students have been labelled as one of the most important target markets (Totten et al. 2005) and the largest consumer group of mobile phone services (McClatchy, 2006). For these young adults, researchers have explored multiple facets of mobile phone use, including motivation (Leung, 2007), psychological effects (Ha et al. 2008; Walsh et al. 2008), etiquette (Lipscomb et al. 2005), implications on social networks (Subrahmanyam et al. 2008), impact on campus life (Quan-Haase 2008), among others. However research that explores how distinct segments within this population shape their attitudes, and value mobile device functionality is underexplored.

This paper seeks to provide a more holistic view of mobile phone user preferences and perceptions by applying methodologies from the marketing and information systems domains. First a theoretical model that proposes antecedents to attitude towards use of mobile phones is presented as a basis for investigation. Next, conjoint analysis, which has been widely used in the marketing literature, is used to gain insights into how undergraduate university students value various mobile phone applications and tools. Cluster analysis is performed on the output from the conjoint analysis to extract salient and homogeneous consumer segments that possess similar preferences for mobile phone functionalities. Lastly, structural equation modelling (using PLS analysis), which is widely used in information systems literature, explores how antecedents to attitude may differ by the elicited consumer segments found through the cluster analysis. Conclusions and implications are presented from theoretical and practical perspectives.

2. THEORETICAL MODEL

The adoption of technological products and services has been explored through the lens of several established models and theories. Within the context of mobile devices, Nysveen, Pedersen and Thorbjornsen (2005a; 2005b) have proposed and validated an adoption model based on the Theory of Reasoned Action (Fishbein and Ajzen 1975), the Technology Acceptance Model (Davis 1989) and two non-utilitarian motives. They propose several antecedent to attitude towards use (perceived expressiveness, perceived enjoyment, perceived usefulness, perceived ease of use, and normative pressure), which in turn mediates the relationship to intention to use (with the exception of normative pressures, which has a direct effect on intention to use).

The Nysveen et al. (2005a, 2005b) model is the basis for investigation in this study. It encapsulates both hedonic and utilitarian motives with the mobile services context. It has been demonstrated to be robust across age groups, gender and mobile service categories. The current investigation seeks to understand the perceptions of university student groups that are currently using mobile devices with various applications and tools. Since the group under investigation is already using the mobile devices/services, intention to use is deemed to be an inappropriate endogenous variable. As such, a simplified Nysveen et al. model is used in this investigation that focuses on attitude towards use as the endogenous variable with its antecedents. This simplified model is presented in Figure 1.

The antecedents to attitude identified in Figure 1 are defined as follows:

- Perceived Expressiveness: The ability of an individual to express his or her emotions or identity (Cassidy et al. 1992).
- Perceived Enjoyment: The extent to which an individual perceives using a technology to be "enjoyable in its own right, apart from any performance consequences that may be anticipated" (Davis et al. 1992, p. 1113).
- Perceived Usefulness: The degree to which an individual "believes that using a particular system would enhance his or her performance" (Davis 1989, p.320)

- Perceived Ease of Use: The degree to which an individual "believes that using a particular system would be free of efforts" (Davis 1989, p. 320)

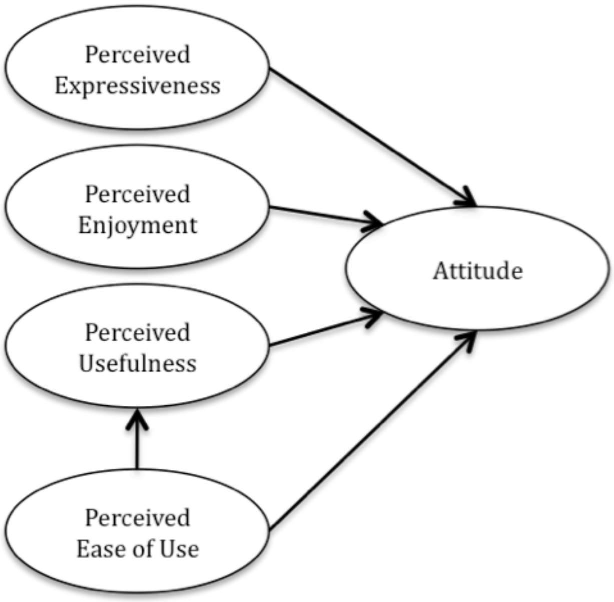

Figure 1. Theoretical Model

3. CONJOINT ANALYSIS

Conjoint analysis is a multivariate technique that can be used to understand how individual's preferences are developed (Hair et al. 1995). Specifically, conjoint analysis is used to gain insights into how consumers value various product attributes based on their valuation of the complete product (Baker et al. 2002). Respondents are asked to make difficult attribute trade-offs with the aim of discovering the value behind their choices.

While rather unexplored in the information systems research, conjoint analysis has been used widely in marketing literature to evaluate consumer preferences for hypothetical products and services (Hair et al. 1995). Conjoint analysis has been applied to understand preferences in different markets including apparel (Dickenson et al., 2004), grocery stores (Wilson-Jeanselme and Reynolds, 2006), transportation (Hensher, 2001), and telecommunication services (Kim, 2004). However, few studies have used conjoint analysis within the mobile phone industry.

In the current investigation, conjoint analysis is used to understand how common attributes influence university students' valuation of a mobile phone. Attributes are defined as (i) mobile phone applications, which focus on the actions that can be performed (such as sending/receiving text messages); and (ii) mobile phone tools, which focus on the applications that can be used (such as an alarm clock feature). Each attribute is subdivided into levels as shown in Table 1, based on a thorough scan of applications and tools of mobile phones available in the Canadian market. Voice calling was omitted as a function as it is considered standard and used by all. These levels are used to create hypothetical products based on different combinations of attributes that individuals rate (Hair et al., 1995) in order to determine part-worths. A positive part-worth 'adds' value to the product while a negative part-worth decreases value.

Applications	Text Messaging
	Taking and/or sending pictures
	Downloading ringtones

	Downloading and/or playing music (MP3 or radio)
	Downloading and/or playing games
	Recording and/or sending videos
	Using email
	Web Browsing
Tools	Alarm Clock
	Calendar
	Personal Notes
	Calculator

Table 1. Tools and Applications

3.1 Survey Design

Sawtooth Software SSI[TM] Web programming was used to generate the survey for conjoint analysis based on the mobile phone attributes and levels identified in Figure 1. Conjoint analysis questions consisted of five types: (i) rating questions where individuals were asked to rate all levels based on their desirability (7-point scale); (ii) 'importance' questions in which individuals are asked to rate the importance of a change in attribute (for example, if two mobile phones were acceptable in all other ways how important would a change in a particular attribute be); (iii) pair-wise comparison questions where participants are asked to choose between mobile phones with different combinations of attributes; (iv) calibration questions in which individuals are asked to rate between 0-100 if they would use a mobile phone with given attribute combinations; and (v) rating most important and least important attribute levels given various combinations of five level bundles. This information is used to generate part-worths for each participant via the Sawtooth Software SSI application. Additionally, various demographic information was gathered for each participant.

3.2. Data Collection

A survey was completed using Sawtooth Software SSI Web program and was filled out by a representative student population from a major Canadian university. A pilot study was conducted with 20 participants to ensure the time to complete the survey was not onerous and the questions were clear and understandable. Based on the feedback of this pilot study, very minor edits were made to a small subset of the survey questions. Surveys were distributed electronically to the undergraduate population.

In total, 212 individuals answered the survey. Eliminating incomplete surveys and ineligible participants (such as those that did not own a mobile phone), 188 eligible surveys were collected. Demographic information is summarized in Table 2. Overall, the sample consisted of slightly more females (60%) with an average age of 20.7. Financially, the university studies of responents were funded primarily through family contributions (51%). Participants tended to be heavy mobile phone users, where half of them used their phones more than 50 times per week.

Category		**Count (n=188)**	**Percent (%)**
Gender	Male/Female	76/112	40.4/59.6
Age	17	1	0.53
	18	22	11.70
	19	33	17.55
	20	42	22.34
	21	34	18.09
	22	26	13.83
	23	17	9.04
	24	10	5.32
	25/+	3	1.60

	Average	20.7	
Academic Level	Year 1	12	6.38
	Year 2	43	22.87
	Year 3	43	22.87
	Year 4	40	21.28
	Year 5/+	7	3.72
	Post-graduation	43	22.87
University Funding	Family	95	50.53
	Employment	38	20.21
	Government	32	17.02
	Scholarships	5	2.66
	Bursaries	3	1.60
	Bank Loans	7	3.72
	Not answered	8	4.26
Use (Times per week)	< 10	14	7.45
	10 - 29	36	19.15
	30 - 50	43	22.87
	> 50	95	50.53

Table 2. Demographics

3.3 Data Analysis

A summary of the conjoint results is presented in Table 3. Using ordinary least-squares regression analysis, the estimated model provides the relative importance of the attributes as well as the part-worth of each level of the attributes. As indicated previously, a positive part-worth value indicated that the presence of that level of the attribute adds that amount of utility to the mobile phone product. In contrast, a negative part-worth value indicates that the presence of that level of the attribute in the mobile phone product lessens its utility.

Attribute	Level	Part-Worth	Relative Importance (%)
Mobile Phone Function	Text Messaging	67.38	63.46
	Taking and/or sending pictures	3.66	
	Downloading ringtones	-20.21	
	Downloading and/or playing music (MP3 or radio)	-8.16	
	Downloading and/or playing games	-19.79	
	Recording and/or sending videos	-14.15	
	Using email	-0.03	
	Web Browsing	-8.68	
Mobile Phone Feature	Alarm Clock	26.58	36.54
	Calendar	0.97	
	Personal Notes	-25.92	
	Calculator	-1.63	

Table 3. Conjoint Analysis Results

Overall, it appears that the presence of several levels of mobile phone applications and tools decrease utility in the eyes of the student consumer. To maximize utility for this customer segment, it appears that the ideal mobile phone should include the following: (i) text messaging; (ii) alarm clock; (iii) taking and/or sending pictures; and (iv) calendar.

4. CLUSTER ANALYSIS

An investigation of part-worths at the individual level revealed wide heterogeneity. Therefore, a cluster analysis was performed to help classify respondents into more homogeneous preference groups. These part-worths are then used as input for cluster analysis. This approach has been conducted by various researchers across industries in order to determine customer segments based on distinct preference profiles (Baker & Burnham, 2002; Haddad et al., 2007; Mankila, 2004).

The k-means cluster procedure in SPSS was used to perform the segmentation. Based on the sample size, solutions were searched in two to four clusters. The 4-cluster solution resulted in one segment that was very small in size and could not be statistically reliable (n<15). A 2-cluster solution was chosen over the 3-cluster solution due to the size of the segments and statistical significance. An analysis of variance revealed that the segments in the 2-cluster solution differed significantly (p<.001) from each other with respect to their part-worth variables generated by the conjoint analysis.

The mean part-worths for each of the levels of the attributes of the two segments are shown in Table 4. Cluster 1 is the larger cluster (n=111) and characterized by very heavy utility allocation on text messaging. While individuals in this cluster also expressed some positive utility of having the ability to take and/or send pictures, all other mobile phone applications had a negative impact on the overall utility of the mobile device. It is evident that this segment utilizes their mobile phones for instant communication through texting and, in some cases, sending/receiving pictures as part of that communication. They view additional functionalities as unnecessary hindrances. We call this segment *instant communicators*.

The second cluster (n=77) also views text messaging as being important and valuable. However, individual in this cluster also demonstrated that email and web browsing applications had a positive impact on the overall utility of mobile phones. While they appreciate the ability to instantly communicate via text messaging, this group also seeks to use their mobile devices to search and gather information from the web and asynchronous email communication. We call this segment *communicators/information seekers*. Both segments valued the alarm clock feature and minimal positive utility was attributed to calculator and calendar tools for Clusters 1 and 2, respectively. However, for both segments, mobile phone applications played a much more important role in assessing value compared to mobile phone tools.

Attribute	**Level**	**Cluster 1 (n=111)**	**Cluster 2 (n=77)**
Mobile Phone Function	Text Messaging	3.71	2.59
	Taking and/or sending pictures	0.59	-0.50
	Downloading ringtones	-0.63	-1.18
	Downloading and/or playing music (MP3 or radio)	-0.29	-0.71
	Downloading and/or playing games	-0.73	-1.33
	Recording and/or sending videos	-0.54	-0.82
	Using email	-0.88	1.23
	Web Browsing	-1.23	0.71
	Relative Importance	*76.3%*	*80.4%*
Mobile Phone Feature	Alarm Clock	1.20	1.02
	Calendar	-0.12	0.09
	Personal Notes	-1.23	-0.78
	Calculator	0.15	-0.32
	Relative Importance	*23.7%*	*19.6%*

Table 4. Cluster Analysis Results of Mean Part-Worths

From a demographic perspective, it is interesting to note that there were no significant differences between the *instant communicator* group and the *communicator/information seeker* group. The average age for the *instant communicator* group was 20.4, 60.4% were female and 51% use their mobile phones more than 50 times per week. The average age for the *communicator/information seeker* group was 20.8, 58.4% were female and 49% use their mobile phones more than 50 times per week. The two groups also demonstrated similar distributions for their academic levels and university funding sources.

5. SEM ANALYSIS

Following the conjoint analysis questions of this study, a survey was conducted to capture the perceptions of participants for the constructs outlined in the theoretical model presented in Figure 1.

5.1 Survey Design and Validation

All items for this part of the survey were constructed as agree-disagree statements on a seven-point Likert scale, as shown in Appendix A. Content validity considers how representative and comprehensive the items are in creating the experimental constructs. To establish content validity, a common method used is a literature review to scope the domain of the construct (Petter et al. 2007). As shown in Appendix A, the survey items used in this research were adapted from previously validated work, thus satisfying content validity.

A PLS approach to confirmatory factor analysis (CFA) was used to assess the psychometric properties of the multi-item scales, as outlined by Gefen and Straub (2005). Table 5 shows the specification of the outer model for the constructs, which were all reflective in nature. Every item loaded significantly on the construct it was supposed to measure ($p < .001$).

Construct	Item	Loading	SE	t-statistic
Expressiveness	Express1	.90	.02	37.38
	Express2	.78	.06	13.37
	Express3	.87	.03	28.52
Enjoyment	Enjoy1	.84	.02	36.13
	Enjoy2	.89	.01	65.60
	Enjoy3	.93	.01	86.42
	Enjoy4	.93	.01	79.61
PU	PU1	.91	.01	85.64
	PU2	.95	.01	113.12
	PU3	.89	.02	48.17
PEOU	PEOU1	.84	.03	31.35
	PEOU2	.94	.01	120.04
	PEOU3	.93	.01	62.86
Attitude	Att1	.92	.01	102.36
	Att1	.94	.01	141.53
	Att3	.87	.02	49.87

Table 5. Specifications of the Outer Model

Construct validity assesses the extent to which a construct measures the variable of interest and whether “the measures chosen ‘fit’ together in such a way as to capture the essence of the construct” (Straub et al., 2004, p. 388). Table 6 summarizes various construct validity. Internal consistency is assessed by Cronbach α-values and composite reliability. Cronbach α-values ranged from 0.821 for Expressiveness to 0.918 for Enjoyment, which is well past the thresholds recommended by Nunnally (1978). Similarly, the composite reliability of each reflective construct exceeded the recommended threshold of 0.7 (Straub et al. 2004). Convergent validity is demonstrated as the average variance extracted (AVE) of all reflective constructs and exceeded 0.5 (Fornell and Larcker 1981).

Construct	α-value	Composite Reliability	AVE
Expressiveness	.821	.888	.727
Enjoyment	.918	.943	.804
PU	.906	.941	.841
PEOU	.884	.929	.813
Attitude	.897	.936	.830

Table 6. Construct Validity

Discriminant validity was assessed to ensure that reflective constructs differed from each other. The complete loadings matrix of the reflective constructs is shown in Table 7. When using the PLS CFA method to examine discriminant validity, Gefen and Straub (2005) recommend that the measurement items on their assigned latent variables should be an order of magnitude larger than their loadings on other variables. As evident from Table 7 this criteria is satisfied. As per Fornell and Larcker (1981) the correlations between items in any two constructs should be lower than the square root of the average variance shared by items within a construct. As shown in Table 8, the square root of the variance shared between a construct and its items (appearing in bold along the diagonal) was greater than the correlations between the construct and any other construct in the model, satisfying Fornell and Larcker's (1981) criteria for discriminant validity. In fact, following the suggestion of a more stringent approach, proposed by Gefen et al. (2000), of using the AVEs themselves instead of their square roots across the diagonal renders the same conclusion with respect to discriminant validity. Given the above analysis, the scales used in this study demonstrated sufficient evidence of uni-dimensionality, internal consistency, and convergent and discriminant validity to be included in the structural model.

	Constructs				
Items	**Expressiveness**	**Enjoyment**	**PU**	**PEOU**	**Attitude**
Express1	**.90**	.34	.35	.07	.32
Express2	**.78**	.31	.31	.01	.16
Express3	**.87**	.29	.34	.00	.24
Enjoy1	.39	**.84**	.52	.30	.63
Enjoy2	.21	**.89**	.49	.50	.69
Enjoy3	.37	**.93**	.54	.33	.65
Enjoy4	.36	**.93**	.56	.41	.67
PU1	.31	.58	**.91**	.48	.62
PU2	.37	.53	**.95**	.39	.57
PU3	.41	.50	**.89**	.32	.53
PEOU1	.02	.36	.46	**.84**	.52
PEOU2	.08	.45	.41	**.94**	.69
PEOU3	.04	.35	.32	**.93**	.63
Att1	.19	.63	.53	.75	**.92**
Att1	.27	.66	.59	.65	**.94**
Att3	.36	.73	.60	.46	**.87**

Table 7. CFA Loadings Matrix of Reflective Constructs

	Expressiveness	Enjoyment	PU	PEOU	Attitude
Expressiveness	**.853**				
Enjoyment	.365	**.897**			
PU	.631	.589	**.917**		
PEOU	.040	.431	.438	**.902**	
Attitude	.389	738	.631	.681	**.911**

Table 8. Discriminant Validity of Reflective Constructs

5.2 Data Analysis

A structural equation modeling (SEM) approach was used to assess the theoretical model provided in Figure 1 across the two student customer segments identified in the above conjoint and cluster analyses. SEM possesses many advantages over traditional methods, as it can simultaneously test the structural and measurement model and allows for more complete modeling of theoretical relations (Gefen et al. 2000). Specifically, the variance-based Partial Least Square (PLS) method of SEM was used in this investigation as it has fewer demands on sample size (Chin 1988) and is more appropriate for testing theories in early stages of development compared to co-variance based methods of SEM (Fornell and Bookstein 1982).

With regards to sample size, Chin (1988) recommends that the minimum sample size for a PLS analysis should be the larger of (a) ten times the number of items for the most complex construct; or (b) ten times the largest number of independent variables impacting a dependent variable. The theoretical model had four items in its most complex construct (enjoyment), and four independent variables impacting the attitude dependent variable. Both cluster sample sizes (111 and 77) exceed the recommended threshold of forty.

Figure 2a and 2b provide the results of the PLS analysis for the *instant communicator* and the *communicator/information seeker* clusters. PLS does not generate overall goodness-of-fit indices. Therefore, model validity was primarily assessed by examining the structural paths and R^2 values (Chin 1988). As recommended by Chin (1988), bootstrapping (with 500 sub-samples) was performed to test the statistical significance of each path coefficient using t-tests. All path coefficients for the *instant communicator* group were significant, however the causal relationship between perceived expressiveness and attitude was not significant for the *communicator/information seeker* group. Approximately 65% and 80% of the variance for attitude is accounted for by the variables in the model for the *instant communicator* and *communicator/information seeker* segments, respectively.

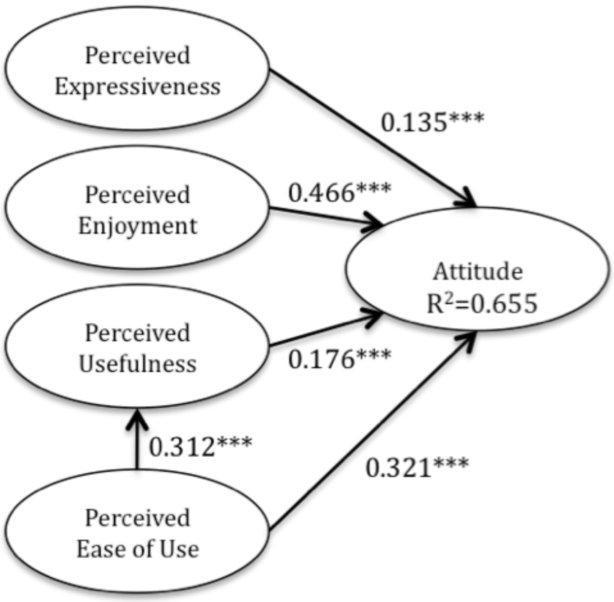

Figure 2a: Cluster 1 Structural Model (n=111) (instant communicators)

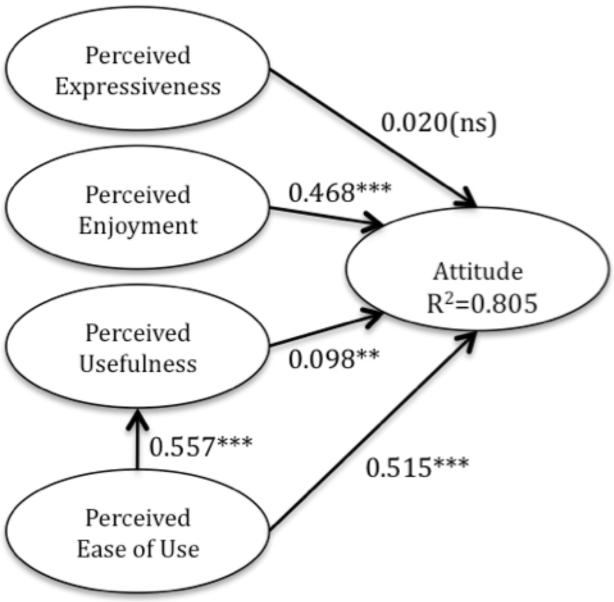

Figure 2b: Cluster 2 Structural Model (n=77) (communicators/information seekers)

Table 9 provides descriptive statistics for the five perception constructs gathered in this study across the two identified clusters (*instant communicators* and *communications/information seekers*). MANOVA analysis was conducted to examine differences between group means of all constructs in the above model across the two clusters. MANOVA test statistics included Pillari's Trace, Wilks'

Lambda, Hotelling's Trace, and Roy's Largest Root. The p-values of these statistics were found to be significant ($p < 0.01$) across the two clusters. Table 10 summarises the MANOVA results, where cluster is the independent variable, and perceived expressiveness, perceived enjoyment, perceived usefulness, perceived ease of use and attitude are the dependent variables.

Construct	**Cluster 1 (Instant Communicators)**		**Cluster 2 (Information Seekers)**	
	Mean	Std. Dev.	Mean	Std. Dev.
Expressiveness	2.79	1.39	2.95	1.55
Enjoyment	4.83	1.09	4.32	1.34
PU	4.83	1.39	4.57	1.51
PEOU	5.70	1.19	5.18	1.57
Attitude	5.33	1.14	4.83	1.43

Table 9. Descriptive Statistics by Cluster

Dependent Variable	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
Expressiveness	1.072	1	1.072	0.508	.447
Enjoyment	11.751	1	11.751	8.207	.005**
PU	3.083	1	3.083	1.493	.223
PEOU	12.193	1	12.193	6.595	.011*
Attitude	11.663	1	11.660	7.320	.007**
Note: Cluser (*instant communicator* and *communicator/information seeker*) is the independent variable					

Table 10. Summary of Results of the Multivariate Analysis of Variance

6. DISCUSSION AND CONCLUSIONS

While the use of mobile phones and their available applications and tools have grown dramatically in recent years, research that explores how consumer segments shape their attitude, and value mobile device functionality is underexplored. The research presented in this paper seeks to provide a more holistic view of consumer preferences and perceptions by applying methodologies from the marketing and information systems domains. First, conjoint analysis, which has been widely used in the marketing literature, is used to gain insights into how university students value various mobile phone applications and tools. Second, cluster analysis is performed on the part-worth values derived from the conjoint analysis to extract salient and homogeneous consumer segments that possess similar preferences for mobile phone functionalities. Third, structural equation modelling (using PLS analysis), which is widely used in information systems literature, explores how antecedents to attitude may differ by the elicited consumer segments found through the cluster analysis.

The above process generated two distinct segments of university student consumers of mobile phones: (i) *instant communicators*; and (ii) *communicators/information seekers*. The *instant communicators* have one primary objective for using mobile phones: to instantly communicate in a synchronous fashion. Additional functionality, such as web browsing, email, downloading ringtones, music, games, etc., actually decreases the overall perceived utility of the device. In contrast, *communicators/information seekers* appreciated the ability to communicate synchronously (text messaging) and asynchronously (email) as well as information searching/gathering on the web. For *instant communicators*, the ability to use their mobile phones to express their emotions and/or identity was a significant determinant to positive attitude towards their devices. However, this ability to express emotion and/or identity is not a determinant to attitude for *communicators/information seekers*. It appears that the latter group tends to perceive their mobile phone as a utilitarian tool, while the former has a more hedonic perspective for their mobile phone. This is evidenced by the *instant communicators* demonstrating significantly higher levels of enjoyment and positive attitude towards their mobile phones when compared to *communicators/information seekers*.

From a theoretical perspective, this work helps to further validate and contextualize the theoretical model proposed by Nysveen et al (2005a, 2005b). As expected, perceive enjoyment, usefulness and ease of use are significant determinants to attitude towards mobile phone use. However the impact of perceived expressiveness on attitude can vary by mobile phone consumer segment. This research provides insights for preferences and perception of one such segmentation among university students. While mobile phone use has been studied across different age groups (for example, O'Roirdan et al. 2005), gender (for example, Nysveen et al. 2005b) and nationalities (for example, Srivastava 2005), segmentation by utility of mobile phone attributes has received little attention in academic research.

From a practical perspective, utility segmentation is useful as it provides insights for function and feature bundling, which can shape product development and marketing strategies that best meet the expectations of distinct market segments. Specifically, mobile phone manufacturers that target university/college students should consider streamlining their offering to provide *instant communicators* with easy to use applications that allow for self expression in a synchronous manner, and *communicators/information seekers* the ability communicate synchronously and asynchronously as well as web browse without the distraction of advanced applications that are not utilized or valued.

Appendix A: PLS Survey Questions

Perceived Expressiveness (Hysveen et al. 2005) I often talk to others about my mobile phone's features Using my mobile phone's features is part of how I express my personality Other people are often impressed by the way I use my mobile phone	***Enjoyment (Davis et al. 1992)*** Using my mobile phone's features is exciting Using my mobile phone's features is pleasant I have fun using my mobile phone's features I find using my mobile phone's features to be enjoyable
Attitude (Hassanein & Head 2007) I have positive feelings about my mobile phone's features Using my mobile phone's features is a good idea The thought of using my mobile phone's features is appealing to me	***Perceived Usefulness (Davis 1988)*** My mobile phone's features help me be more effective My mobile phone's features make it easier to accomplish tasks My mobile phone's features help me be more productive
Perceived Ease of Use (Venkatesh 2000) Interacting with my mobile phone's features does not require a lot of mental effort I find it easy to get my mobile phone to do what I want to do I find my mobile phone's features easy to use	

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