Conventionalists, Connectors, Technoisseurs and Mobilarti: Differential profiles of mobile marketing segments based on phone features and postmodern characteristics of consumers

A. Goneos-Malka*, A. Strasheim[1] and A.F. Grobler[2]

University of Pretoria, South Africa

* Correspondence to: P.O. Box 786655, Sandton 2146, South Africa. Tel.: +27829070700, +27118044074; fax: +270118044074. E-mail addresses: mail@amaleya.net (A.Goneos-Malka).

[1] Tel.: +27124203145, +27828875180; fax: +27123625085, arien.strasheim@up.ac.za (A.Strasheim).

[2] Tel.: +27124202306; fax: +27865700743, anske.grobler@up.ac.za (A.F.Grobler).

Abstract

The high penetration of mobile phones amongst the South African population presents mobile phones as an attractive interactive marketing communication medium. This paper argues that the access and actual use of different phone device features can be productively used as a segmentation approach, which may enable marketers to be more effective in planning interactive marketing communication plans. This study, based on 330 students, developed segments derived from mobile phone usage patterns using cluster analysis. The outcome revealed four clusters that were named: *Connectors, Conventionalists, Technoisseurs and Mobilarti. Connectors* made daily use of a full range of communication functions. *Conventionalist*s were inclined to limit their use of mobile phone features to talking and texting. *Technoisseurs* were found to use a whole range of sophisticated mobile phone facilities. *Mobilarti* were identified as a group of expert users; using the full range of functions available to them on their phones, despite recording the lowest percentage of

smartphone ownership when compared to the other groups. These groups were further profiled by analysing attitudinal and behavioural variables pertaining to two newly developed postmodern dimensions, which were introduced in the study as mobile importance as an attitudinal aspect, and social transformation as a behavioural outcome. For marketers, an understanding of the proposed segments, as well as the differences in attitudes towards mobile importance and social transformation behaviours, coupled with typical financial and social realities of these segments, allow targeting strategies that are more clearly actionable.

Keywords

Mobile marketing; Social media; Mobile phone usage; Segmentation; South Africa; Young adults (18-34 yrs); Postmodernism; Mobile market segments; Social transformation; Phone features

1. Introduction

Mobile phones are becoming the highest penetrating medium worldwide. According to the International Telecommunications Union (2011), in 2005 there were approximately two billion mobile cellular subscriptions worldwide. By the end of 2011 the same source estimates subscriptions to have increased three-fold to almost six billion, which is roughly 85% of the global population. South Africa's mobile cellular subscription is in line with global penetration rates, with 80% of its population recorded as subscribers (All media products survey June 2010-July 2011). The phenomenal uptake of mobile devices amongst the South African population, even in the lowest income segments, is testament to the usefulness of this technology in modern life, and the importance people place on these devices.

In conjunction with the widespread penetration of mobile phones, advances in technology have improved the communication capacity of these instruments. Mobile phones have become convergence devices mopping up multiple technologies; transforming the apparatus from simple voice-only products to systems that surpass applications of fixed-line telephony. For example, consumers have the ability to access the Internet, tune into radio broadcasts, use the devices as cameras, and view television (Sandvig, 2008). Media and communication technologies are persistently expanding, driving further sophistication of devices and supporting networks to meet consumer demands (Dimmick, Feaster & Hoplamazian, 2010). The potential of mobile phones to provide communication and media access anytime and anywhere has implications for modern society, as well as marketing and marketing communication practices. Mobile phones offer interactive marketing platforms between brands and consumers; permitting either party to initiate activities (Sultan, Rohm & Tao, 2009).

The body of previous research into mobile marketing is growing; ranging from permission based advertising (Barwise & Strong, 2002) and the effectiveness of mobile advertising (Choi, Hwang & McMillan, 2008) to accessing mass-mediated content from mobile devices (Dimmick, Feaster & Hoplamazian, 2010). Significant studies have been conducted in technologically advanced countries, for example, South Korea (Hjorth, 2008), Taiwan (Wei & Lo, 2006), Japan (Ito, 2005), and Finland (Battarbee & Koskinen, 2005), where individuals are more predisposed to technology acceptance and adoption and are not restricted by limited access or affordability constraints to technology products and services. To contextualise South African income profiles: Statistics South Africa (2010), recorded the median monthly income of South African employees, as R2800.00 (approximately £150); and indicated that the bottom 5% earned R500.00 (approximately £27); and the top 5% earned upwards of

R18,900 (approximately £1,025) per month. With extremely limited access to expensive Internet and data services in South Africa, an understanding of how these constraints affect the behaviours of mobile users is very important for more effective mobile campaigns.

The high penetration of mobile phones amongst the South African population suggests that mobile phones are a feasible marketing communication platform. However, in order to utilise the various features available on mobile phones as marketing channels, one needs to understand: a) which features consumers have access to; b) which features consumers in this kind of market actually use; and c) how frequently they use these features. It could be considered ignorant to implement mobile campaigns without understanding the dynamics of consumer behaviour towards mobile phone features, and the potential cost implications of marketing messages to the receivers of these communications.

Whilst on one side, access to interactive communication is limited for most consumers in South Africa, due to affordability of connectivity and costs of data, and on the other side, for marketers, the returns on mobile marketing campaigns may be limited due to economic realities. Therefore, a useful segmentation approach towards an improved understanding of consumer behaviour, coupled with the features available and those that mobile owners access on their mobile phones could be productive for both marketers and consumers. Although numerous mobile phone segmentation studies have been initiated elsewhere, (Head & Ziolkowski, 2010; Kimiloğlu, Nasir & Nasir, 2010; Okazaki, 2006; Sohn & Kim, 2008; Zhu et al., 2009), none of these studies considered the availability of different features of mobile devices and the actual use of these features as an approach to segmentation.

The purpose of this study was to develop consumer market segments based on usage frequency of mobile phone features. Secondly, a measure of mobile importance as an attitude was developed, and thirdly, a measure of postmodern behaviour, named social transformation was developed. Lastly, differences between consumer segments, based on the perceived importance of their mobile phones, and differences between the segments on social transformation, as an outcome from a postmodern perspective were explored.

Using a postmodern perspective of society, as viewed by Berthon and Katskeas (1998); Brown (1994, 1995, 2006);Firat and Dholakia (2006); and Firat, Dholakia, and Venkatesh (1995), this study argues that social transformation is an outcome of postmodern society, enabled by mobile devices and other technological advances in society. Social transformation is argued to be one of the results of cell phone ownership, the actual features on the devices owned, the kind of features being used, affordability of connectivity, and the importance of the mobile device as a connection medium to society and markets, conceptualised as an attitude towards the mobile phone.

Ownership of advanced and sophisticated features on mobile devices does not necessarily translate into actual use of these features. It is however argued that actual use of features on mobile phones are more often determined by an interest in these features, the psychological importance placed on the phones, and whether the usage of these features has financial implications for the users. In addition, phone features and actual use of these features are not the only determinants that distinguish between differences in the usage levels of phone features. The psychological utility and importance that users place on their phones, and how they view these devices to enable them to make choices, and connect to the world, may further explain differences between the actual use of phone features.

2. Literature review

2.1 Segmentation

Over many decades scholars considered segmentation beneficial in marketing strategies (Smith, 1956, Claycamp & Massy, 1968; Dickson & Ginter, 1987; Wedel & Kamakura, 2000). The seminal paper by Smith (1956) introduced segmentation with the argument that markets were moving towards imperfect competition rather than achieving a state of perfect competition; because they were becoming increasingly diverse rather than homogeneous. Segmentation is viewed as a valid and appropriate marketing strategy under conditions of imperfect competition. The attraction behind market segmentation as a strategy was largely economic; it demonstrated how an organisation could sell a particular product or service to different segments of the market to improve profitability (Claycamp & Massy, 1968).

Segmentation approaches for mobile marketing has been proposed by different scholars globally. In Korea, Sohn and Kim (2008) used patterns of mobile service usage, such as "Caller ID", and identified three clusters: (1) a segment characterised by their utilisation of paid for services; (2) a segment based on their frequent use of low-cost or free services; and (3) a segment based on an indistinct usage pattern. In Canada, Head and Ziolkowski (2010) segmented mobile phone users into two groups according to their preferences to use certain mobile phone functions: (1) a segment distinguished by its high use of text messages, and (2) a segment that considered texting to be important, but rated access to Internet and email as being important functions too. In Turkey, Kimiloğlu, Nasir and Nasir (2010) assessed the consideration factors involved during the purchasing decision of mobile phones, identifying four segments that characterised distinct patterns of consumer behaviour in the context of

buying a mobile phone. In Japan, Okazaki (2006) identified segments based on mobile Internet adopters; and in China, Zhu et al., (2009) used consumer lifestyles and the fees charged by mobile operators for various mobile services to form market segments.

2.2 Mobile phones and marketing communication

According to Varnali, Toker and Yilmaz (2011:5) "mobile marketing is the creation, communication, and delivery of customer value through the wireless, mobile medium." The body of mobile marketing literature is accumulating, in line with the increased adoption of mobile advertising by marketing practitioners. Notable contributions that scholars have made to mobile marketing, particularly factors that influence consumer's use of mobile services and mobile marketing are highlighted in the ensuing paragraphs.

Hyun Jin and Villegas (2008) evaluated the fundamental factors contributing towards consumers' use of mobile services. The factors identified included social escapism, motivation, socialisation, economic and personal gratification. Moving to factors that affect consumers' use of mobile services, Sullivan Mort and Drennan (2007) consider the hedonic and utilitarian value of mobile phones, and found that factors of innovativeness and involvement were significantly related to consumers' use of mobile services. Sullivan Mort and Drennan (2007) and Hyun Jin and Villegas (2008) explored mobile services and applications that required internet access in order to for the services to operate, as opposed to mobile services that are inherent to mobile telephones (the subject of this study) and do not rely on internet connectivity to function.

Vatanparast and Hasan Butt (2007) bridge consumer behaviour towards mobile devices and mobile advertising, and identified three main factors influencing consumer behaviour, namely (1) the purpose that a person intends to fulfil with the mobile device, (2) the extent of an individual's personal information available to third parties, and (3) the person's reaction and attitude towards mobile advertising. Consumer acceptance towards mobile advertising is a significant characteristic for successful mobile marketing. Okazaki and Barwise (2011) consider consumer acceptance towards push and pull mobile advertising. Push communications directly target mobile phone users (for example SMS advertisements) and pull communications invite mobile phone users to respond to advertising conveyed in various media types. Building on the idea of pull communications, Fulgoni and Lipsman (2014) contend that social media, as a response and engagement platform between advertisers and consumers, will be an accelerant for mobile advertising as a consequence of consumers migrating from deskbound access to mobile access of social media.

Mobile marketing is a multi-faceted discipline that continues to evolve. The literature suggests that effective mobile phone marketing solutions will be those that integrate consumer attitudes towards advertising in conjunction with their behavioural patterns and access to mobile phone technology.

By using mobile phones as a personal medium and a communication tool people have the ability to make individual choices about the content they engage with (Groening, 2010), at their convenience. People have increased flexibility in terms of the time and place they access content, as well as the time they spend consuming content. Mobile phones provide a range of communication applications that can be used for marketing communication activities. Users'

interactions with the plethora of mobile phone features, is this study's point of departure from the extant mobile advertising research.

3. Methodology

3.1 Measures

This exploratory study was designed to: firstly, segment respondents according to their use of mobile phone features and frequency of use by applying cluster analysis; secondly, to identify factors measuring the importance of mobile phones; and thirdly, factors measuring social transformation.

The questionnaire contained questions relating to the respondents' tendency to use specific mobile phone features. Respondents were asked to record the most relevant frequency of their use of specific features as either daily, weekly, monthly, never or not applicable. Responses were coded using the following scale (3-daily; 2-weekly; 1-monthly; 0-never, -not applicable). The "not applicable" category was coded as a missing value.

From a postmodern perspective of society, (Berthon & Katskeas, 1998; Brown, 1994, 1995, 2006; Firat & Dholakia 2006; Firat, et al., 1995), sets of items were developed that gauged aspects of postmodernism, by firstly considering the importance of the mobile technology as an attitudinal measure, secondly how mobile devices lead to social transformation in individuals and society as a behavioural outcome of postmodernism. The content of the items were also informed by extensive industry experience of the first author, and academic experience of the remaining authors. Two new measures were operationalised. The first

measure, *mobile importance* was measured by seven statements using a five-point Likert scale. The items were developed to probe the importance of mobile phones to individuals and the extent to which media is consumed and accessed through these devices. The second measure *social transformation*, was operationalised by generating 16 items capturing some of the behaviours and social benefits of using mobile devices. The idea with the items was to gauge the intrinsic rewards associated with the use of social media and to develop an understanding of consumer preferences in their interactions with brands to market offerings. The original items were pilot tested and minor adjustments were made to items where required.

Demographics and contextual variables included in the study were gender, age, ethnicity, smartphone ownership, mobile phone plan, use of Internet data bundles on mobile phones, monthly expenditure on mobile phones, split for talk and texting functions, monthly expenditure on mobile phones for Internet data bundles, and use of social networks.

3.2 Sampling

The target population for this study consisted of young adults, who in the context of this study have been classified as Generation Y, individuals born between the period 1978 to 2000 (Kotler & Armstrong, 2010; Yarrow & O'Donnell, 2009). Sixty-eight percent of the South African population is under the age of 34 (Statistics South Africa, 2011). At a count of 34.5 million, this segment is a sizeable proportion of consumers. Generation Y, apart from its size, represents a significant population group from a marketing perspective and has demonstrated a particular affinity for new media, through their tech savvy aptitudes (Sohn & Kim, 2008; Stald, 2008; Yarrow & O'Donnell, 2009).

The sub-segment of the population used in this study comprised of full-time registered students enrolled in the department of Marketing and Communication Management, at the University of Pretoria during the 2011 academic year. A permission based database listing 2,265 suitably qualified individuals served as the sampling frame. The entire sampling frame was contacted to maximise the number of responses. An email invitation was sent to the database, containing a link to access the online survey. An incentive to win one of six iPods was offered to respondents that completed the survey. The incentive was deemed appropriate, since attitudes towards iPods or their use were not the subject of the study. Data collection for the main study took place over a ten day period in October 2011. In total 398 respondents participated in the survey. However, only 333 respondents fully completed the questionnaire, which equated to a response rate of 14.7% for completed usable questionnaires.

Table 1 records the demographic profiles of respondents who participated in the survey with those of students enrolled with the department of Marketing and Communication Management, at the University of Pretoria during the 2011 academic year. The composition of the sample respondents is representative of the student population registered within the department across all variables except for age. Most of the respondents (88%) were between the ages of 18-22.

Table 1: Demographic profile of students enrolled at the department of Marketing and Communication Management

		POPULATION	SAMPLE
GENDER	Female	72%	68%
	Male	28%	32%
AGE GROUP	18-20	27%	47%
	21-22	41%	41%
	23-24	18%	7%
	25-29	8%	4%
	30-34	2%	<1%
	35+	3%	<1%
RACE	White	70%	62%
	Black	25%	34%
	Asian	3%	3%
	Coloured	2%	1%

Source: Population data retrieved from University of Pretoria, 2011; sample data from results of this study

3.3 Data Analysis

In this study, cluster analysis was used for segmentation purposes in order to form groups that are more similar to one another than they are to objects in other clusters, thereby attempting to maximise homogeneity of objects within clusters while also maximising the heterogeneity between the clusters. Cluster analysis can be used for the purpose of segmentation by developing groups of entities into mutually exclusive homogenous groups (Everitt et al., 2011; Wedel & Kamakura, 2000).

In an effort to classify the respondents into different mobile usage groups, a K-means non-hierarchical cluster analysis was performed using the 13 variables that measure how often the different mobile phone features are accessed or used by the respondents. The features included talking, messaging, accessing social media, accessing the Internet for information, listening to or downloading music, using email, playing games, taking photographs, taking videos, using calendar function, using calculator function, using notes function, and using mapping navigation function.

For the two new measures, exploratory factor analysis with varimax rotation (Everitt, 2010; Field, 2005; Hair et al., 2010) was used to explore the dimensionalities of mobile importance and of social transformation.

4. Results

4.1 Cluster Analysis: Mobile phone usage groups

The mean frequency ratings of use of features are presented in Table 2. The feature used most frequently by respondents is "messaging" (m=2.96), and the feature used least often by respondents is "mapping/navigation" (m=1.46). On average the three features used most regularly pertain to communication, namely messaging, accessing social media and talking.

Table 2: Descriptive statistics – mean scores (all mobile phone features) (n = 333)

	Mean	**Min**	**Max**	**Std. Deviation**	**N**
Talking	2.79	1	3	0.44	326
Messaging	2.96	2	3	0.20	326
Accessing social media	2.79	1	3	0.50	313
Accessing the Internet for information	2.46	1	3	0.68	309
Listening to or downloading music	2.10	1	3	0.80	268
Using email	2.48	1	3	0.69	273
Playing games	1.91	1	3	0.82	223
Taking photographs	2.07	1	3	0.74	316
Taking videos	1.63	1	3	0.73	261
Using calendar function	2.41	1	3	0.68	311
Using calculator function	1.96	1	3	0.74	307
Using notes function	2.12	1	3	0.77	230
Using mapping navigation function	1.46	1	3	0.66	190

Of a two, three, four and five cluster solution, the four cluster solution was selected since it provided clearly distinguished clusters of approximately equal sizes (bottom rows in Table 3). The four cluster solution, with the cluster centre values for each of the thirteen clustering variables is summarised in Table 3.

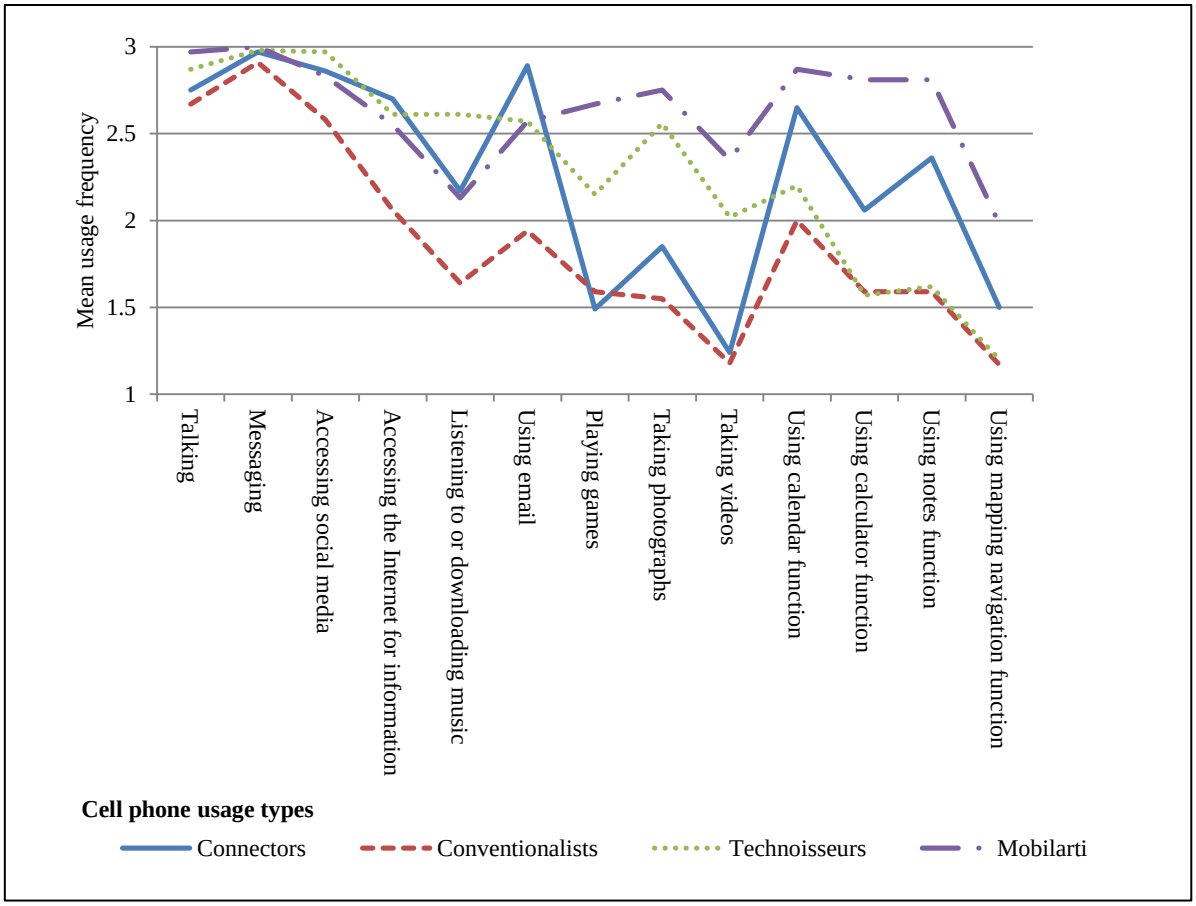
Table 3: Cluster centres – mobile phone usage types

	Segments based on mobile feature use				Overall Mean
	Connectors	**Conventionalists**	**Technoisseurs**	**Mobilarti**	
Talking	*2.75*	*2.67*	**2.87**	**2.97**	2.79
Messaging	**2.97**	*2.91*	**2.98**	**3.00**	2.96
Accessing social media	**2.86**	*2.58*	**2.97**	**2.83**	2.79
Accessing the Internet for information	**2.70**	*2.06*	**2.61**	**2.55**	2.46
Listening to or downloading music	**2.17**	*1.64*	**2.61**	**2.13**	2.10
Using email	**2.89**	*1.94*	**2.57**	**2.57**	2.48
Playing games	*1.49*	*1.59*	**2.15**	**2.67**	1.91
Taking photographs	*1.85*	*1.55*	**2.56**	**2.75**	2.07
Taking videos	*1.24*	*1.18*	**2.02**	**2.35**	1.63
Using calendar function	**2.65**	*2.00*	*2.20*	**2.87**	2.41
Using calculator function	**2.06**	*1.59*	*1.57*	**2.81**	1.96
Using notes function	**2.36**	*1.59*	*1.62*	**2.81**	2.12
Using mapping navigation function	**1.50**	*1.17*	*1.20*	**1.98**	1.46
Cluster frequencies	93	106	63	64	326
Cluster percentages	28.5%	32.5%	19.3%	19.6%	100%

In Table 3, figures in bold are larger than the overall means, whilst figures in italics are less than the overall mean

The four clusters were characterised by making inter-cluster centroid value comparisons for each of the different frequency variables and also by comparing all centroid values to the overall mean frequency value. The mean usage frequency for each of the four clusters is displayed in Figure 1.

Figure 1: Frequency of usage – mobile phone usage types



4.2 Cluster profiles

The four clusters formed were labelled *Connectors*, *Conventionalists*, *Technoisseurs* and *Mobilarti*.

4.2.1 Connectors (28% of total group)

Connectors are slightly older (63% between the ages of 21 to 29), which differs to the sample population norm (where 53% are between the ages of 21-29). *Connectors* are predominantly white (72%), which corresponds with the overall composition profile of the sample. Among *Connectors*, 76% own smartphones; 62% have mobile phone contracts; and 50% use Internet bundles. More than half of this group spend less than R50 on Internet bundles; 32% spend

between R51 to R100; and 12% spend more than R101, which is more bundle spending than any other cluster identified.

Connectors indicated, on average, that they accessed the communication facilities (messaging, social media and email) available on a mobile phone almost on a daily basis while the frequency of using other facilities is lower. They demonstrated an average usage frequency for talking, playing games, taking photographs and taking videos that is lower than that of the sample as a whole. This group's ownership of smartphones, use of cell phone contracts and high use of Internet bundles indicates that its members have reasonable access to financial means on a regular base (which are necessary to satisfy contractual debit orders). Being slightly older than the norm, this group may have already established preferences for the various functions they choose to use on their mobile phones. Taking this point into consideration, as well as the financial means available to this group, its members possibly have the choice to use different independent devices to fulfil other functions, such as video cameras to take videos. *Connectors* mainly use their mobile phones as a communication and personal organisation tool.

4.2.2 Conventionalists (33% of total group)

The *Conventionalist* group is slightly dominated by white students, (74% compared to the sampled population in which 68% of respondents were white). In terms of aspects relating to mobile infrastructure, 62% own smartphones (in comparison to 69% of sample population); 62% utilise mobile phone contracts (in comparison to 56% of sample population); and only 27% use Internet bundles (in comparison to 40% of sample population), with just over 60%

spending less than R50 per month on Internet bundles for their mobile phones (in comparison to 56% of sample population).

These respondents demonstrated the highest usage frequency (almost daily) for facilities that were originally the only functions available on most mobile phones (talking and messaging), while the frequency of use of all other mobile features are considerably lower, especially newer applications made available on mobile phones such as taking videos and mapping navigation. On average the overall usage frequency of all features is lower than that of the overall group. *Conventionalists*, as is the case with *Connectors*, have regular financial support for meeting contract obligations.

Conventionalists can be considered to be laggards with respect to the adoption of technology. However, it may be possible that this group prefers to use separate devices for their intended use, for example they may prefer to use a camera for taking photographs rather than their mobile phones; this assumption supports the finding that the majority of *Conventionalists* do not use Internet bundles and therefore possibly access the Internet through alternative methods. *Conventionalists* tend to limit the use of their mobile phones to the initial functions developed for mobile phones such as talking and texting.

4.2.3 Technoisseurs (19% of total group)

The term *Technoisseurs* is used to describe the third segment, which consists of a group of people that are technology connoisseurs. *Technoisseurs* constitute younger and more blacks of the sample. The majority 55% (compared to 47% in the sample) of *Technoisseurs* are young (18-20 years old) whilst 45% are black (compared to 32% in the sample). Most *Technoisseurs* (81%) own smartphones, which is considerably higher than the 69%

smartphone ownership in the sample. Their access to technology seems to be very similar to that of the entire sample, since 55% have mobile phone contracts; 46% use Internet bundles; and in terms of monthly expenditure on Internet bundles 51% spend less than R50 with 32% spending between R51 to R100, and 17% spending in excess of R100.

These respondents indicated that they use all communication facilities (talking, messaging as well as social media) with high frequency (almost daily) while using all other facilities less frequently, although more frequently than the *Conventionalists*. A distinguishing behaviour for this group is that they listen to or download music more frequently than any other group. This segment is characteristically younger than the other groups, with the majority aged 18-20. It should be noted that this age group is a period of maturation, characterised by identity formation and high levels of self-awareness. The need for uniqueness may be high and asserting individuality and establishing social standing among their peers is typical of this age group. The high level of smartphone ownership amongst *Technoisseurs* could be the consequence of their need for social acceptance amongst their peers; with the device representing both status as well as a tool to engage in peer activities that are facilitated through mobile phones. Music is a strong component of youth popular culture which supports *Technoisseurs'* higher propensity to listen to or download music than any other group. On average the usage frequency of all features except calendar, calculator, notes and mapping navigation, is higher for the *Technoisseurs* than the group as a whole.

4.2.4 Mobilarti (20% of total group)

The name *Mobilarti*[1] is derived from *Digerati*, a term used to describe the elite cyber opinion experts who contributed to early public opinion of the World Wide Web (Selwyn 2009). Consumers making up the *Mobilarti* cluster draw maximum benefit from their mobile handsets, conceivably because financial constraints preclude them from using alternatives. In recognition of their proficient use of mobile handsets they have been labelled *Mobilarti* in this study.

Based on age, *Mobilarti* are evenly split with almost 51% aged 18-20 and 49% between the ages of 21 and 29. In terms of ethnicity 53% are black and 47% are white, which is noticeably more dominated by blacks compared to 32% blacks in the sample. *Mobilarti* are distinct from other groups in that they use a wide variety of mobile functions and do so often, with the exception of downloading music, taking videos and mapping navigation. The average usage frequency for all features is higher than that of the respondents in all other clusters as well as the mean frequency for the group as a whole.

Based on the respondents' tendency to use most features available on a mobile phone one would anticipate the *Mobilarti* group to be technically advanced and thus predisposed to using the latest gadgets. Therefore it is somewhat surprising to find that only 57% of this group own smartphones, which is the lowest level of smartphone ownership across all four clusters. Furthermore most *Mobilarti* use prepaid mobile phone plans (63%) and 44% use Internet bundles on their mobile phones. Just over half spend less than R50 per month on

[1] The authors acknowledge an anonymous reviewer's suggestion of the term *Mobilarti* that was made on an earlier version of this paper, which was submitted to the *2012 World Marketing Congress Cultural Perspectives in Marketing, Buckhead, Atlanta, GA.*

Internet bundles and almost one third spend more than R100 on Internet bundles. These findings lead one to assume that the *Mobilarti* belong to low income socio-economic groups.

The following explanations are offered as potential reasons behind the *Mobilarti* group's low use of video, mapping navigation and downloading music. Firstly, since the *Mobilarti* are less likely to own a smartphone, their handsets potentially lack certain functions, which may preclude them from utilising features like video and mapping and navigation. Secondly, in terms of downloading music, the low tendency to perform this activity may be linked to data charges associated with this function. Thirdly, because of their low socio-economic status they are more likely to use public transportation which tends to use fixed routes, and thus negates the need for individuals to use navigation functions. A further point related to the use of public transportation is that people using these services possibly make use of their mobile phones (listen to music, play games, communicate) to pass the time during their journeys.

It would seem that high dependency on their mobile phones has inadvertently made the *Mobilarti* expert users of their devices, which they use for multiple purposes, because they might not have access to alternative technologies, possibly as a result of financial or time constraints due to lengthy commutes. For instance, a respondent from a higher socio-economic background may have a digital camera in addition to the camera on his or her mobile phone or iPod to listen to music, whereas respondents from lower socio-economic backgrounds are less likely to have alternative devices and rely more on their multi-functional mobile phones. *Mobilarti* are possibly highly proficient users of mobile phone functions because they do not have alternative technology devices available to them.

A pertinent question is how the aforementioned clusters compare to each other in terms of the importance they attach to their mobile devices as enablers of social transformation in postmodern society.

4.3 Mobile importance

The items measuring mobile importance were subjected to exploratory factor analysis and the varimax rotated results are summarised in Table 4. There were no cross-loadings over 0.35 in the rotated solution.

Table 4: Factors loadings for mobile importance

	Component[1]			**Communality estimate**
	Mobile addiction	**Empowered choice**	**Convenient interconnection**	
A2 My cell phone is always on – I'm always connected so that I would not miss out on anything	0.842			0.738
A1 I feel like my cell phone is part of me	0.787			0.717
A3 My cell phone is my most important possession	0.773			0.653
A5 My cell phone enables me to not only choose what digital media applications I want to use, but when I want to and for how long		0.857		0.809
A4 I mainly use my cell phone to access digital media applications and content I want to check, to see what is going on		0.803		0.762
A7 I think location based services delivered through my cell phone would be useful (e.g., using applications to navigate to specific products in a store, knowing which shops stock your brands, receiving special promotions from your stores valid for one day			0.881	0.784
A6 My cell phone connects me to other media (e.g., If I enter a competition advertised in a magazine through SMS, or casting a vote for someone in reality TV, like Idols or Big Brother, or call into a radio station)			0.714	0.624
Eigenvalue	**3.140**	**1.137**	**0.809**	
% of Variance explained	**44.857**	**16.236**	**11.550**	
Cumulative % of variance explained	**44.857**	**61.093**	**72.643**	
Reliability Analysis	**Items A1-A3**	**Items A4-A5**	**Items A6-A7**	
Cronbach's alpha	**0.774**	**0.724**	**0.547**	

1: Note that coefficients smaller than 0.35 are not shown

Based on the results, three factors emerged, which cumulatively explained 72.6% of the variation in the factor space. The factors were named *Mobile addiction, Empowered choice* and *Convenient interconnection.*

The first factor, *Mobile addiction,* can be viewed as being indicative of the postmodern characteristic of *de-differentiation,* through the reversal of roles between subject and object as inferred through the status conferred by individuals to their mobile phones. This factor is suggestive of dependence and addictive attributes in individuals' responses to perceptions of their mobile phones.

The second factor, *Empowered choice*, is suggestive of individuals' right to choose what media they wish to consume under conditions of abundant choice. Using their mobile phones to access media facilitates selective consumption of media. This factor is therefore indicative of postmodernism's philosophy for *tolerance of diversity* (O'Shaughnessy & O'Shaughnessy, 2006)

The third factor, *Convenient interconnection,* is suggestive of the postmodern characteristics of *hyperreality* and *de-differentiation,* exemplified through the blurring of boundaries (Brown, 2006; Firat & Dholakia, 2006). The boundaries in this instance are between physical and virtual domains of media and the dissolution of boundaries between media forms, which is made possible through the use of mobile phones.

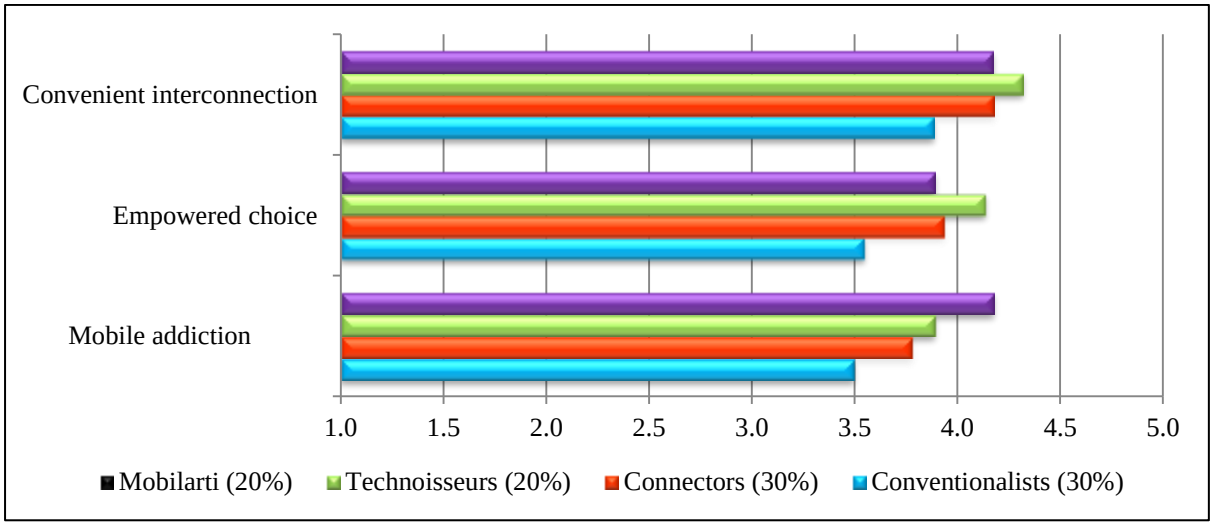
The mobile usage segments were compared based on the means of three factors. The overall mean in Table 5, depicts the relative importance of different aspects of mobile phones as enablers to be active participants in postmodern society. Overall, *Convenient interconnection* seems to be slightly more important than *Empowered choice* and *Mobile addiction.*

Furthermore, the highest mean scores are observed for *Mobilarti* and *Technoisseur* clusters, followed by the *Connectors* and lastly the *Conventionalist* segments. This trend is somewhat anticipated considering the composition of the four clusters as reflected in Figure 2.

Table 5: Factor mean scores for mobile importance factors by usage segments

Mobile phone usage types	All groups	Mobile phone usage segments				ANOVA Significance
	Overall mean	Conventionalists (30%)	Connectors (30%)	Technoisseurs (20%)	Mobilarti (20%)	
Convenient interconnection	4.11	3.89	4.18	4.32	4.17	0.018
Empowered choice	3.84	3.55	3.93	4.13	3.89	0.002
Mobile addiction	3.79	3.50	3.78	3.89	4.18	0.000

Figure 2: Factor mean scores for mobile importance factors by usage segments



In terms of the factors, *Convenient interconnection* and *Empowered choice*, the *Technoisseur* group had the highest mean scores across the mobile phone usage groups. This finding corroborates the fact that respondents in this group use a wide range of mobile phone features. Furthermore, 81% of this segment own smartphones, therefore the technological capabilities of their devices facilitate access to and use of a range of media applications and social media platforms. In terms of *Mobile addiction*, the *Mobilarti* group had the highest mean score across the groups, which demonstrates the necessity of mobile phones amongst

this group in comparison to the other three clusters. The *Connector* group records slightly higher mean scores than the *Mobilarti* group on *Convenient interconnection* and *Empowered choice*; which supports the notion that members of this group use their mobile devices for connectivity, and have the choice to choose what mobile phone features or media content they wish to engage with through their handsets, which are predominantly smartphones. The *Conventionalist* group consistently scored lower for each dimension than all other groups, highlighting their comparatively lower dependence on mobile devices.

These results indicate that the *Mobilarti* are constrained by the limits of the technology they have access to. It is anticipated that if members of the *Mobilarti* group were to upgrade their mobile phones from feature phones to smartphones, their use of these more technologically sophisticated devices is likely to stimulate migration of members from this group to the *Technoisseur* group.

The three mobile importance factors, namely *Mobile addiction, Empowered choice,* and *Convenient interconnection* are considered to be behavioural outcomes in response to a postmodern environment which necessitates continuous social transformation. Therefore, the factors making up mobile importance are regarded as enablers towards postmodern behaviour. The outcome of these postmodern behaviours, in terms of respondents' use of social media, is social transformation.

4.4 Social transformation

Social transformation is multi-dimensional and the factors suggesting aspects of social transformation are presented in the exploratory factor analysis varimax rotated results shown

in Table 6. Two items had cross-loadings, namely B4 and B15. B4 had a cross-loading of 0.37 with the second factor, versus 0.70 in the first factor. B15 had a cross-loading of and 0.41 for the first factor against a loading of 0.66 in the fourth factor. Since these cross loadings were considerably smaller than the loading in the other factor, the item was used in the factor scores that were subsequently calculated, in factor in which the highest loading was obtained.

Table 6: Factors loadings for social transformation

	Factor				Communality estimate
	Hyperreal cult	**Hyperreal escapism**	**Interactive collaborat-ion**	**Dissolved boundaries**	
B5 I feel more connected to my friends on social networks sites when they post comments about things I share with them	0.772				0.673
B3 Social networks are very important to keep up and form new friendships	0.770				0.722
B2 My online social networking reinforces my offline friendship	0.736				0.606
B4 When I share interesting posts on my social network my popularity increases amongst my friends	0.702	0.371			0.679
B1 I participate in different social network groups to express different parts of me	0.687				0.557
B8 I like to play games on my social networking sites (e.g., Farmville)		0.817			0.686
B16 I participate in virtual reality sites like Second Life or World of Warcraft		0.759			0.639
B7 I like to send and receive virtual gifts on social network sites		0.749			0.664
B13 I like to interact with my favourite brands on my social network sites			0.818		0.824
B14 I usually pay attention to other fans' posts on brand fan pages			0.813		0.815
B10 I think that social media sites have made the world a more connected place				0.894	0.841
B15 Social network sites help me share stories/things I've done/events with friends (e.g., I don't have to tell each friend individually I can just broadcast to my entire network)	0.411			0.662	0.637
Eigenvalue	**4.992**	**1.715**	**0.897**	**0.741**	
% of Variance explained	**41.598**	**14.288**	**7.474**	**6.175**	
Cumulative % of variance explained	**41.598**	**55.885**	**63.359**	**69.534**	
Reliability Analysis	**Items B1-B5**	**Items[2] B7 and B16**	**Items B13-B14**	**Items B10, B15**	**Items B1-B5, B7, B10, B13-B16[2]**
Cronbach's alpha	**0.847**	**0.748**	**0.794**	**0.602**	**0.868**

1: Note that coefficients smaller than 0.35 are not shown

2: Item B8 was excluded due to its low item-total correlation in the calculation of the composite score

The factor analysis resulted in 69.5% of variation being explained. The first factor, named *Hyperreal cult*, has items loading with item content suggestive of the postmodern characteristic of *hyperreality* (Baudrillard, 2006; Brown, 2006; Firat & Dholakia, 2006). These items position social media networks as important communication platforms in contemporary culture, linking and providing the interface to enable contact between people across physical and virtual worlds.

The second factor, *Hyperreal escapism*, dovetails with the postmodern characteristic of *hyperreality*. It suggests escapism through respondents' participation with virtual games or trading as well as the exchange of virtual capital between parties.

The third factor related to *Interactive collaboration*, is suggestive of the postmodern outcome of *collaborative marketing*. It recognises customers as co-collaborators in marketing, who exchange information within relevant communities of interest.

The fourth factor, *Dissolved boundaries*, contains items indicative of the postmodern characteristic of *de-differentiation*. In this instance it pertains to the fact that using social media networks dissolves boundaries of time, space and place. Social media networks facilitate global connectivity of communities.

Table 7 provides the overall as well as the mobile cluster segment mean scores (with the ANOVA significance) for each of the sub-dimensions of social transformation. There is a high degree of variability between mean scores for the various dimensions with the highest mean score (4.14) for *Dissolved boundaries* compared to the lowest mean score (1.95) for *Hyperreal escapism*.

Table 7: Factor mean scores for social transformation by usage segments

Mobile phone usage types	All groups	Mobile phone usage segments				ANOVA Significance
	Overall mean	Conventionalists (30%)	Connectors (30%)	Technoisseurs (20%)	Mobilarti (20%)	
Dissolved boundaries	4.12	3.92	4.15	4.29	4.21	0.037
Hyperreal cult	3.43	3.14	3.50	3.55	3.69	0.002
Interactive collaboration	2.95	2.67	2.86	3.15	3.35	0.002
Hyperreal escapism	1.97	1.66	1.84	2.21	2.44	0.000

Figure 3 shows a similar pattern for the factors of social transformation with the *Mobilarti* and *Technoisseurs* obtaining the highest mean scores followed by *Connectors* and lastly *Conventionalists* for each of the four factors. The exception is the *Mobilarti* group that obtained the second highest score on *Dissolved boundaries*. Potentially, this might be because of the lower incidence of smartphone ownership and conceivably reduced financial means when compared to the other groups. The lack of phone features together with financial constraints may be limiting this groups' perspective of social media networks to negate boundaries of time, space and place to foster global connectivity.

The *Mobilarti* group had the highest mean scores for *Hyperreal cult*; *Hyperreal escapism* and *Interactive collaboration*, which supports this group's behaviour; to utilise a full suite of functions as offered by their mobile devices; to use social networks to connect with their peers and interact with brands. Based on these findings one can interpret the *Mobilarti* group to be digitally savvy through their extensive use of multiple mobile functions to access social media to fulfil both social and market related needs.

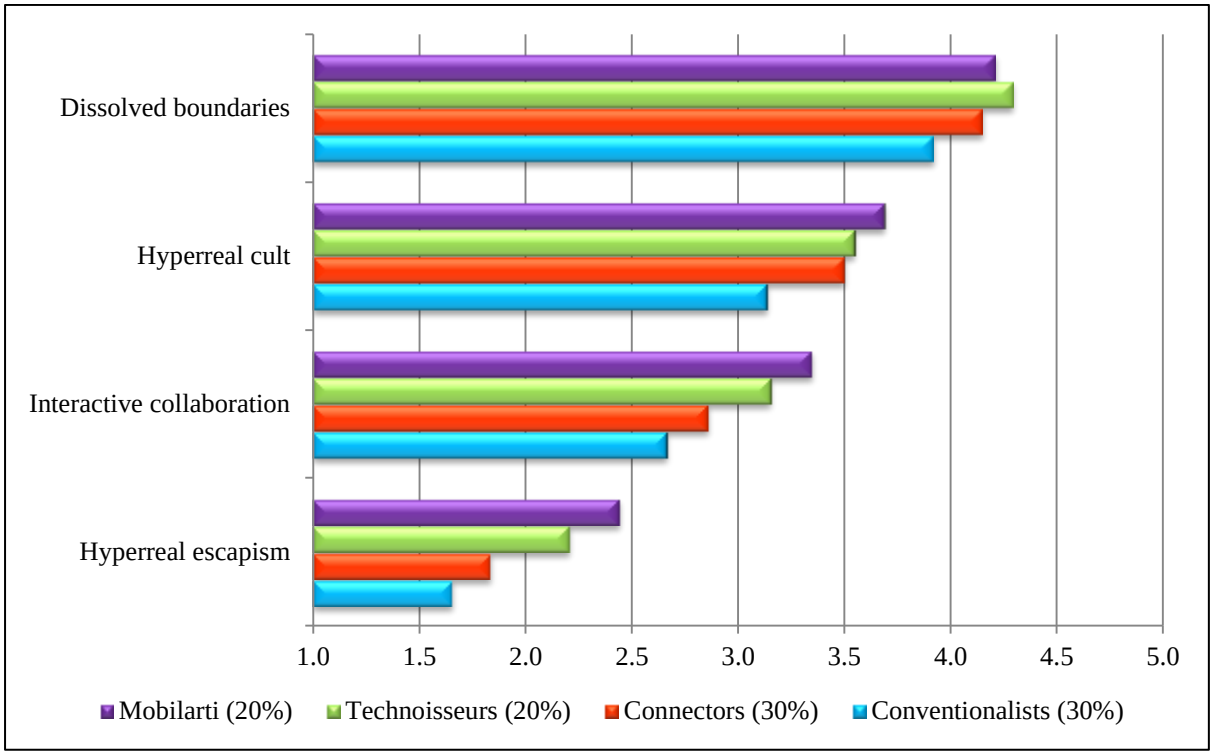
The mean scores for the *Technoisseurs*, consistently rank second to the *Mobilarti* group, (except on *Dissolved boundaries*). *Technoisseurs* are perceived to be more affluent than the *Mobilarti*, therefore perhaps through this group's financial position they can afford to access the Internet more readily to make use of social media platforms, thus they are seen to show

prominent characteristics of postmodern behaviour, although to a lesser degree than the *Mobilarti*.

The *Connector* group reported significantly lower mean scores than the *Mobilarti* or *Technoisseur* groups for the factors, *Interactive collaboration*, and *Hyperreal escapism*. One could interpret these findings to mean that the *Connector* group are less likely to participate in social exchanges about brands and therefore correspondingly less inclined to partake in activities related to the postmodern marketing concept of embedded marketing. Additionally, this group indicated a low propensity to play games on their mobile phones, this finding is mirrored in the cluster analysis of this group where they recorded the lowest mean score across the groups to play games on their mobile phones. This group's low tendency to play games may result from the fact that members of this group are older and have less free time than the other groups.

The *Conventionalists* on the other hand, consistently scored lower mean readings than the other groups, which is in keeping with this group's reserved behaviour towards mobile functions.

Figure 3: Factors mean scores of social transformation factors by usage segments



The differences in social transformation across the clusters reveal outcomes of postmodern behaviour concerning respondents' interactions with social media, which to an extent are dependent upon enablers of postmodern behaviour, which in this case are argued to be aspects of mobile importance, and the use of features available on mobile devices.

5. Discussion

The primary purpose of this study was to profile mobile phone users into mutually exclusive clusters according to their propensity to utilise certain features available to them through their mobile phones. This is the first academic clustering exercise to segment mobile phone users by features in South Africa.

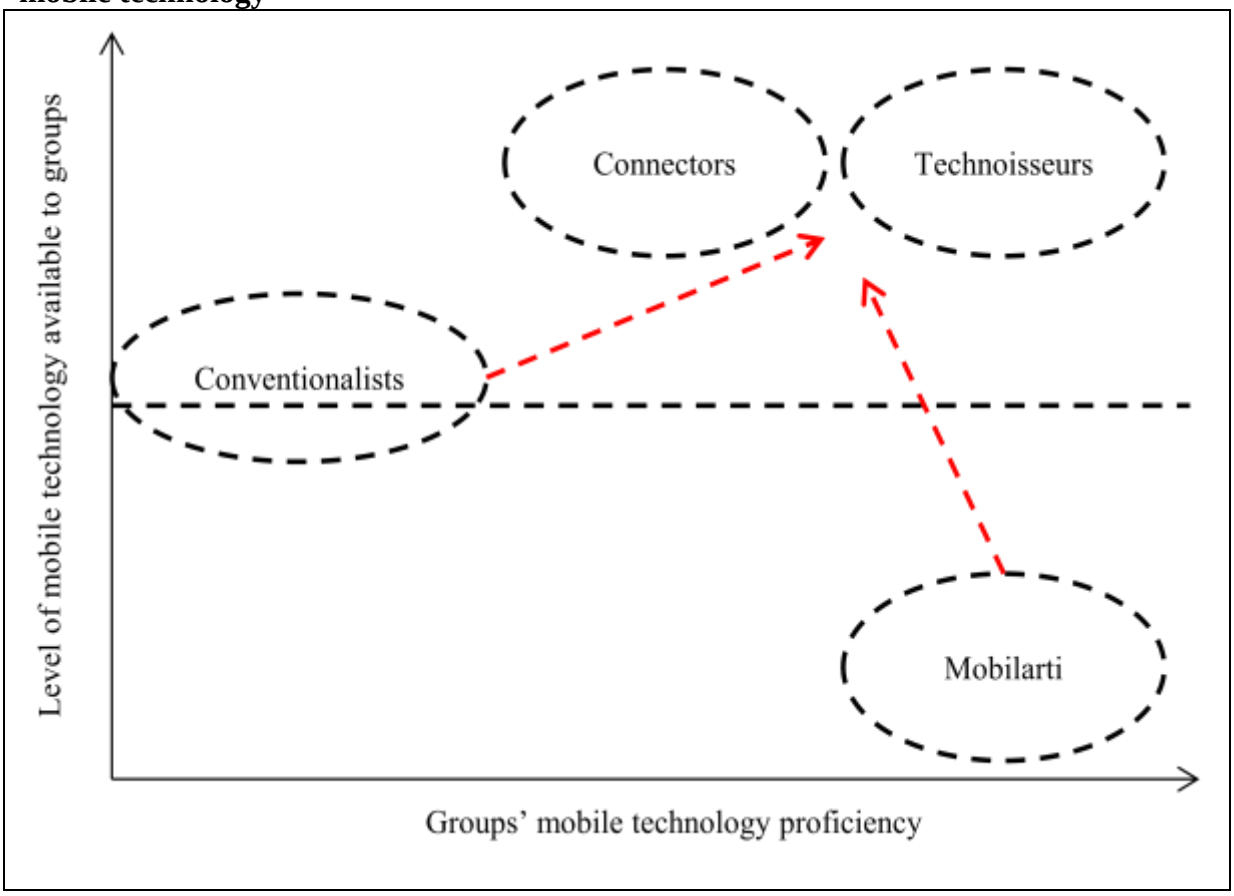
Cluster analysis of respondents' mobile phone usage patterns revealed four distinct clusters, which can be summarised as follows:

- *Connectors* who characteristically make daily use of communication functions available on their mobile phones. This cluster accounted for 28% of the overall group.
- *Conventionalists* who tend to limit their use of mobile phone features to talking and texting. This cluster accounted for 33% of the overall group.
- *Technoisseurs* use a range of facilities on their mobile phones and listen to or download music more than any other cluster in the group. *Technoisseurs* made up 19% of the overall group.
- *Mobilarti* are expert users of the range of functions available to them on their phones. They accounted for 20% of the overall group.

The emergence of four clusters as opposed to a single homogeneous group confirms that people are different and portray their differences in their attitudes and behaviours. The composition of the four clusters differ by age; ethnicity; and socio-economic factors which may exert financial limitations on the type of handset respondents use (feature phone versus smartphone) and the level of disposable income available to respondents to pay for Internet access via their handsets in order to benefit from various media applications.

On the basis of the clustering arrangements two technology limiting dimensions may explain the differences in clusters, namely the sophistication of mobile technology available to respondents and secondly respondents' proficiency of mobile technology. A conceptual map plotting the four clusters against these two technology limiting dimensions is proposed in Figure 4.

Figure 4: Comparing level of mobile technology available with user proficiency of mobile technology



Potentially migration may occur between the clusters. The postulate is that members of the *Mobilarti* and to a lesser extent *Conventionalists* may transition into *Connectors* and or *Technoisseurs*. This movement is depicted in Figure 4, which represents a conceptual plot of the four clusters on axes that indicate the level of mobile technology available to the users against users' proficiency of mobile technology (horizontal axis). An arbitrary line has been incorporated into Figure 4 to represent a threshold point, of the groups' financial standing. Clusters below the line, notably *Mobilarti* lack choices because of their financial constraints; whilst clusters above this line may exercise options of both choice and preference in their decisions to use either various mobile functions at their disposal or even alternative technologies to suit their needs. The clusters have permeable boundaries to reflect migration and diffusion between groups. It is anticipated that forces such as upward mobility and

diffusion of innovation will contribute to the migration of members from *Conventionalist* and *Mobilarti* clusters into *Connectors* and *Technoisseur* groups. Figure 4 offers a visualisation of possible migration or diffusion between clusters in the event of reducing these technology barriers.

The factor analysis results demonstrated that respondents place significant importance on their mobile phones. The mean scores for the three factors making up mobile importance were greater than 3.50 against all four clusters. The overall favourable mean score achieved against the dependent variable of *Convenient interconnection* (m=4.11) supports the integral role of digital media in the lives of respondents; and recognises the seamless perception amongst respondents that fuses their physical offline worlds with their online worlds (Buckingham 2008; Ito 2005). The high scores highlight the overall importance respondents place on their mobile phones, as instruments enabling postmodern behaviour.

There is considerable variability across the mean scores of the four factors making up social transformation. The factor *Dissolved boundaries* had the highest average mean score (m=4.12) which indicates that social media is an important means of connectivity for respondents. On the other hand, the factor *Hyperreal escapism* had the lowest average mean score (m=1.97), which suggests that virtual gaming is not an important activity among respondents, possibly due to high costs involved with accessing online activities, such as virtual gaming within the South African context. *Conventionalists* (m=2.67) and *Connectors* (m=2.86) had low scores for the factor *Interactive collaboration*, an indication of the degree to which respondents interact with brands, which implies that direct interaction with brands is not a significant activity for the respondents in question; however this factor has scores in the medium range for the *Technoisseurs* (m=3.15) and *Mobilarti* (m=3.35). Based on these

scores respondents generally demonstrated postmodern behaviour which is argued to be social transformation of mobile users.

The factors emerging from dimensions of mobile importance and social transformation relate to postmodern traits, where mobile importance signifies mobile phones as important enablers of postmodern behaviour, and social transformation represents outcomes of postmodern behaviour. Mobile phones make it possible for respondents to exhibit postmodern behaviours, for instance interacting with each other across physical domains through virtual media platforms, or participating in collaborative marketing initiatives with specific brands. Respondents' acceptance of the various mobile phone features and the frequency of use is representative of their inclination to use technology and different behaviours place them into different segments according to their technology requirements. Through technology people are able to participate in their environments and regulate their interactions. Some people are passive members of postmodern society and others are more active, arguably the groups that actively participate in society reap the full benefits of what their society has to offer through the choices they make.

The results show statistically significant differences between the four mobile phone usage segments in terms of their tendency to display postmodern behavioural characteristics. *Mobilarti* show the most active signs of postmodern behaviour, even though they have access to the least sophisticated levels of mobile technology when compared to the other groups; this level of access is thought to be related to financial and mobile device constraints. Perhaps the *Mobilarti* group's propensity to display postmodern behaviour is largely driven from their less privileged socio-economic position. The majority of members in this segment, according to the sample profile, has been presented with the opportunity to study at university with the

prospect of advancing themselves to a higher socio-economic status and perhaps their ambitions impassion them to extract as much as possible from the opportunities they encounter.

Technoisseurs showed slightly less postmodern behavioural characteristics than the *Mobilarti*, but placed more emphasis on the empowering capabilities of their mobile devices than was observed by the other groups. *Connectors* ranked third in terms of their tendency towards postmodern behaviour. The *Conventionalist* cluster consistently obtained the lowest mean scores for every factor measured, which leads one to assume that this segment reflects the least postmodern behavioural characteristics, and this group might stagnate in this position, due to the fact that they have alternative devices replacing some mobile features.

Postmodern consumers tend to be more active and express a willingness to contribute to marketing and/or marketing communication (Firat & Dholakia, 2006). Digital media has made it possible for consumers to contribute to market related content through the generation and sharing of content in social media (Correa, Hinsley & Zúñiga, 2010; Kaplan & Haenlin, 2010; Multisilta & Milrad, 2009).

5.1 Managerial implications

Several managerial implications emanating from the results may be derived, for example the benefits of understanding the identified segments according to mobile phone usage patterns may enable marketers, mobile phone manufacturers, advertisers, software application developers, and mobile network operators to be more effective in the mobile marketing communication and mobile commerce domains.

- The complete saturation of mobile phones among respondents coupled with respondents' propensity to utilise multiple features accessible through their mobile phones to varying degrees underlies the importance of mobile phones as a communication channel among respondents and conceivably between marketers and their customers.
- Segmentation based on the mobile phone features that consumers use and frequency of usage, presents an alternative approach to consumer profiling. This method of segmentation assists marketers in terms of choosing appropriate mobile phone features to communicate with particular segments. For instance, using features that appeal to particular users so that they are more receptive to a communication method. For example, *Conventionalists* tend to limit their mobile phone use to talking and texting features, which suggests that communications utilising these features should be implemented when targeting the *Conventionalists* segment. Marketing practitioners will be able to design distinct communication strategies to target each cluster.
- The results indicated that technology limiting capabilities are a function of user ability as well as handset functionality. For instance, *Mobilarti* recorded the lowest percentage of smartphone ownership, but demonstrated the highest usage frequencies

of features accessible from their handsets, when compared to the other clusters; treating their phones as technology convergence devices. Whereas the *Conventionalists* group, of which 63% own a smartphone, tend to utilise basic functions of talking and texting despite possessing handsets with significantly more sophisticated capabilities than those belonging to the *Mobilarti*. The implication is that consumer profiling should take into consideration both the type of devices used by consumers as well as consumers' technical proficiencies; because the results demonstrate that people who own technologically superior handsets do not necessarily utilise the full functionality offered by these devices.

- The types of features respondents utilise have implications on the development of future features or applications and receptivity of the market towards these new developments. This knowledge will help to anticipate what future features may be adopted and which clusters these features would appeal to; and test the receptivity of clusters to free or fee-based features.

This segmentation study sheds light on the possibility of forging new business developments that aggregates the stakeholders (i.e. social network sites and location information providers), content (i.e. advertisers, advertising agencies, broadcasters and other content developers), and mobile network operators to better fulfil mobile marketing communication activities (Stanoevska-Slabeva et al., 2010).

6. Limitations and Suggestions for further research

Additional advancements in mobile technology are likely to lead to the development of new features and applications that were not previously available. Therefore consumer access to

these choices may, in the future, impact on the compositions of the cluster profiles developed in this study. In light of this it is suggested that longitudinal studies be undertaken to detect changes in trends. Cross-sectional surveys, as employed in this study, represent a snap-shot of peoples' attitudes towards mobile media during a particular period, consequently changes in behaviour are not captured, and the dynamics that occur over time do not form part of this study. Therefore, a longitudinal study occurring over a longer period of time is suggested, to track possible developments within and between the four clusters that were identified in this study.

The findings in this study should be interpreted keeping a number of limitations of the study into account. The sample used in this research limits the generalisability of the study to the larger Generation Y population. The views expressed by respondents in the study are not necessarily representative of the overall South African Generation Y group; and the student sample is possibly biased towards a more privileged group in society. It is recommended that future research should include younger as well as employed members of Generation Y to allow for the generalisability of the results. Alternatively, studies into other generations could be conducted to determine the categories of mobile phone usage segments within these generations; this would allow for comparability of mobile usage amongst different segments of the overall population.

7. Conclusion

The high penetration of mobile phones among the South African population suggests widespread acceptance of this technology by the populace; and positions mobile phones as a viable medium for marketers to connect with their consumers. Use of mobile phone functions

and the nature of use are suggestive of the high degree to which mobile phone media are integrated into respondents' lives (Buckingham, 2008).

Technology and application developments are increasingly advancing the types of features and applications available on mobile phones. Despite the near ubiquitous penetration of mobile telephones in South Africa, consumers do not experience equally high levels of access to mobile internet, largely as a consequence of handset capability and high data tariffs constraining access. Segmentation of the market according to mobile phone features used and extent of usage, offers marketers an improved understanding of the market's mobile usage patterns and therefore suggests which mobile phone features marketers should make use of in interactive communication campaigns directed at different market segments.

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