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Typology of Mobile Phone Replacement Behaviour among Generation Y in Malaysia

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Abstract:
Frequent change of mobile phones is believed to bring negative consequences to our well-being. This replacement behavior is influenced by complex reasoning that lies beyond product depreciation. The main objective of this study was to develop typology of consumers' mobile phone replacement behaviour. Data were statistically analysed using cluster analysis and chi-square analysis. Based on a confirmed hypothesized model, replacer typologies consisting of apathetic replacers, pragmatic replacers and enthusiastic replacers were constructed. Majority of the respondents fell under enthusiastic replacer group (49%). Results from the chi-square analysis showed that enthusiastic replacers have greater emphasis on the consumption values, are highly motivated towards new technology, have high incomes and are likely to have tendency of compulsive in replacement of mobile phones. The development of replacement typologies based on the research framework derived from Theory Consumption Values and Technology Acceptance Model assist to face the critics of lacking of theoretical consolidation in variables selection in segmentation studies (Dibb and Simkin, 2009).

Keywords: compulsive replacement, technology adoption, enthusiastic replacers

1. Introduction

1.1. Background

The penetration of mobile phone use in Malaysia was almost 138% reaching about 39.8 million of subscribers (Malaysian Communications and Multimedia Commission, 2012). In 2013, the IE Market Research's Mobile Operator Forecast reported that approximately 41.9 million people subscribing to various service providers, and this made an increase of 5.28% from 2012. Meanwhile, in terms of replacement rate, Malaysian Communications and Multimedia Commission (MCMC) Statistic Department (2014) reported that 38.8% of Malaysians replaced their mobile phones for the past 12 months. The high volume of mobile subscribers indicates the following : (1) mobile phones have become a need in this modern days as compared to shoes; (2) rapid changes in the mobile technology have made it affordable to all people from various socioeconomic backgrounds; (3) mobile technology has advanced rapidly that consumers continually replace their gadgets to keep up with the rapid technology obsolescence; (4) marketing strategies are effective in persuading and convincing consumers to replace their gadgets more frequently than before.

Nevertheless, frequent changing in the high-tech products are believed to negatively impact the human health. For example, the as-mentioned impact can refer to headache, hearing and lack of energy issues, causing a decline in academic success levels, breaking down face-to-face communication, harming one financial budget and negatively impact the environment (Nair, 2012; Wilhelm, Yankov & Magee, 2011). From an environmental point of view, rapid production of materials and components used to produce mobile phones give rise to the toxicity problems (Nair, 2012). In light with the above mentioned potential impacts, the key focus of the study is typologies of mobile phone replacement behavior.

1.2. Problem Statement

Marketers and consumers have different interest. Basically, marketers prefer products with high sales turnover to secure more profit. Thus, more frequent product replacement is welcomed. On the contrary, consumers generally look for products that last longer and do not require frequent replacement to help them save money. However, there are no specific patterns in mobile phone replacement and decision behaviour because according to Murugan (2014), consumers of various ages these days tend to replace their purchased mobile phone not solely due to their depreciation or obsolescence. Replacement of mobile phones is also influenced by other factors such as technological features, augmentation features and

warranty (Murugan, 2014). As mobile phones are one of the fastest growing categories of consumption goods, therefore, a study on the consumer replacement typology is vital for the following justifications:

First, according to GFK (Gesellschaft Fur Konsumforschung)'s latest Technical Market Index report (2012), Malaysia's outstanding earnings in second quarter 2012 were contributed by the technology consumer goods segments with the growth range from eight to thirty percent. Consumer's eager anticipation and adoption of the latest technology in smart phones and tablet have substantially boosted the earnings in this industry. The replacement behavior nowadays is different from the older days where the depreciation rate is the main concern that people trading up the existing product. Having a proper understanding in the consumer replacement behavior specifically in this high turnover product are significant, since the recent rapid revising of the replacement cycle play an important role in social development around the world (Howard and Mazaheri, 2009).

Second, replacement decision and behaviors are influenced by complex reasoning beyond the product depreciation (Murugan, 2014). Hong & Zhuqing (2008) mentioned that consumer's purchase decision often comes from the common driving factor which is the consumption values no matter what kind of product they are purchasing. For example, Flanagan, Howe & Nissenbaum (2008) proposed that the study of technology shall include value dimensions. In this case, consumption values are introduced to be included in examining its relation on replacement behaviour. Meanwhile, Kim et al. (2011) claimed that emotional and social dimensions of consumer values affect a buyers' purchase intention. While Tseng & Lo (2011) suggested that positive beliefs on technology affect consumer choice decision. In addition, most of the existing research has generally focused on economic perspective in examining the reason of trading up or upgrade behavior (Teng, Lu and Yu, 2009) and psychological cost of replacement behavior (Guiltinan, 2010). Furthermore, their concerns are mainly on other durable products such as automobile and consumer household products. The study of consumption values in replacement behavior in the context of mobile phone remains scarce. Therefore, in order to bridge the gap, the consumption values and technology adoption are incorporated as the constructs in the study to examine tendency of mobile phone compulsive replacement behavior.

Third, study on replacement behaviour would help in filling in the significant gap in understanding consumers' propensities to behave and behavioural typology with regard to product replacement behaviours. Current literature reviewed has provided a body of knowledge to better understand consumers' mobile phone purchase decision. For example, Kim, Gupta and Koh (2011) focused on customers' value perspective in explaining the purchase behaviour, while Alnawas and Aburub (2016) highlighted the interaction based benefits approach in analysing purchase intention. However, current literatures almost neglect the consumer replacement behaviours from the perspective of obsession and compulsiveness, which makes it, an interesting topic to be explored further by researchers. For example, it is puzzling to think to why there are consumers who are willing to line up to become the first buyers to own the newly launched iPhone or Samsung mobile phones in the market? The current study attempted to go beyond relying on the surface reasons of consumers' purchase intention to explain consumer replacement behavior by analysing tendency of consumers' compulsive behaviour and drawing up a typology of replacement behaviour, which were previously neglected in the literature.

In short, this study attempted to fill in the literature gap by developing the typology of consumers' mobile phone replacement behaviour in relation to consumption values and attitudes towards technology that influence consumers' tendency of compulsive replacement behaviour. In specific, this study presented the following objective:
1. To construct consumers' mobile phone replacement typologies.

1.3. Literature Review

1.3.1. Consumption Values

According to Sheth, Newman and Gross (1991), the Theory of Consumption Values explains the reason why consumers decide to procure a certain product and select one product of a particular brand over another. The theory emphasised on three fundamental theorems and five consumption values. The three fundamental theorems of the Theory of Consumption Values were suggested by Sheth, Newman and Gross (1991). Firstly, consumer choice is a function of various consumption values. Secondly, consumption values have varying results at any given choice situation. Lastly, consumption values are exclusive to each other. The five consumption values that guide consumer choice behaviour are listed, functional value, social value, emotional value, epistemic value and conditional value.

Functional value is the rational value placed by consumers on the products' practicality and utility performance (Sheth, Newman & Gross, 1991). Previous researchers outlined that the basic notion of functional approach is that people act in a way to fulfil functions for its life; such as maximizing needs and rewards, and expressing one's value (Katz, 1960).
Despite the rational or economic aspect of consumption values, Sheth, Newman and Gross (1991) included several values in explaining consumers' consumption values from the social psychological perspective. In describing consumers' choice behavior, social value plays a vital role in consumption pattern. Consumption value is predicted using social values, which refer to the choice behaviour as seen in the link between different specific social groups (Sheth, Newman & Gross, 1991).

Emotional value refers to the utility attained from a choice's ability to astonish feelings, or emotional states. A person is embedded with emotional value when the goods relate to specific feelings (Sheth et al., 1991). Both positive and negative

emotions are driving market choices. For example, positive emotions are excitement, pleasure, satisfy, loyalty and nostalgia while negative emotions are upset, fear and angry (Sheth et al., 1991).

Epistemic value refers to the utility derived from the choices that can draw out a person's eagerness, curiosity or the appetite to seek for knowledge (Sheth et al., 1991). In other words, epistemic value is often acquired from something that is contemporary, dissimilar or variety seeking (Sheth et al., 1991).

Khan and Mohsin (2017) agreed that consumption values have a significant impact on consumers' choice behavior. Price is the main driver that affects their purchasing decision. If the perceived utility of a product is high, the possibility an individual to buy and consume the product is also high (Khan & Mohsin, 2017). In addition, Khan and Mohsin (2017) found that conditional value influences an individual's decision whereby if an individual perceived the discounted items as an inferior product, it will stop him or her from consuming the item. In addition, Khan and Mohsin (2017) also explained that epistemic value does affect an individual's purchasing decision. For example, if an individual tends to have a negative perception of a product, the chances for consumption will be lower. In tandem with the analysis by Lin and Huang (2012), emotional value, epistemic value and conditional value were found to be related to purchase decision in Taiwan. Kim et al. (2011) claimed that emotional and social dimensions of consumer values affect a buyers' purchase intention. Furthermore, a research by Biswas and Roy (2015) showed that individual with functional value and social value tend to have sustainable consumption behaviour. Meanwhile, individuals who lack emotional needs such as love and acceptance from others will tend to indulge in compulsive buying due to loneliness (Roberts, Manolis & Pullig, 2014). This finding is consistent with a previous study by Miller (2007), whereby compulsive buyers were found to engage in excessive buying so as to reduce their negative mood. On the other hand, Jung and Yi (2014) stated that compulsive buying behaviour occurs through social interactions as individuals could learn and adopt the behavior from others.

Since most of the values mentioned have been reviewed in relation to their role in influencing consumers' choice behaviour, prediction of consumption values that drive their choice of replacement is therefore relevant.

1.3.2. Attitudes towards Technology

There are a number of theories and models employed in studying individuals' technology adoption behaviour. Among other, Parasuraman (2000) proposed Technology Readiness Index (TRI) to measure consumers' propensities to adopt new technology. The index suggests that consumers' degree of innovativeness and optimism as the contributors of technology readiness and extent of discomfort and insecurity which act as inhibitors of readiness. Overall, TRI acts as an effective method for predicting an individual's propensity to engage a new innovation. Beyond the study, researchers included additional elements of consumer's relationship with new technologies to strengthen the study. These include anxiety in adopting technology (Meuter, Ostrom, Bitner& Roundtree, 2003), as well as perceived risk of using technology (Lam, Chiang &Parasuraman, 2008). Technology Adoption Propensity (TPA) was later introduced by Ratchford and Barnhart, (2011) to further enhance the usefulness of TRI. Ratchford and Barnhart (2011) included two contributing factors (optimism and proficiency) and two inhibiting factors (dependence and vulnerability) in technology embracement. Optimism is the belief that the technology is able to provide more authority and increase adaptability or elasticity in life (Ratchford & Barnhart, 2011). The optimism factor is in line with TRI, with the exception of increased efficiency, but only belief about control and flexibility. TPA specifies how technology enhances consumer's life, while TPI specifies how it enhances the lives of generalised others. Meanwhile, proficiency is the ability to learn to use the new technology quick, as well as technology competency. On the contrary, the inhibitors, or, the dependency, which is not included in TRI, is a sense of overly dependent on or being bullied by technology (Ratchford & Barnhart, 2011).

Therefore, the research includes investigating consumers' attitude towards technology, i.e. how this particular attitude is eventually integrated in influencing their replacement behaviour to become relevant as this attitude is related to an important indicator that guides a person's buying decision. This is consistent with the study by Arts et al. (2011) which demonstrated that consumers showing high involvement in innovation have greater tendency to adopt new innovation product. According to Ratchford and Barnhart (2011), a perception that technology can furnish us better authority and positive belief towards new technology contributes to consumers' technology adoption and thereafter affects their making decision to purchase technology products. However, if a consumer overly relies on technology and feel vigilant to malicious activities facilitated by technology, this will inhibit the individual from adopting the technology and affect the decision in buying technology products (Ratchford & Barnhart, 2011). Besides that, according to Tseng and Lo (2011), consumer's intention to upgrade can be measured by the individual's technology adoption attitude.

1.3.3. Replacement Behaviour

Economic theories and model aid in understanding behaviour under the study of consumers' replacement behaviour. In term of handphones, consumer always attempt to maximise their net utility of possession over a time span as compared to their incremental rate of replacement and relative functions of the old and new types, (Ellison & Fudenberg 2000).

Furthermore, this utility also depends on the benefits expected over the remaining service life adjusted by the depreciation rate of the existing unit. This utility maximises the replacement model that can be found in many economics and econometrics literatures. In many cases, utilitarian consumption is a primary reason for replacement (Yoo, Chung & Han, 2006).

Grewal et al. (2004) argued that a replacement process takes place when a series of functional aspects encourage a consumer to replace. These include the knowledge function, value-expressive function, social adjusted function and utilitarian function. Knowledge function assists in making a person's life more predictable and secure while value-expressive function assists a consumer in a way that the product helps to convey a person's values and identities to others (Grewal et al., 2004). Consumers who constitute this value-expressive function make their replacement decisions based on their self-identity and their expectations of how others will react to their purchase decisions (Grewal et al., 2004). Social-adjusted function plays its role in helping a consumer to gain approval in a social setting.

Prince's (2009) research further enhanced the study done by Grewal et al., (2004) by suggesting that higher quality products are linked to longer replacement purchasing timing. Chiu et. al., (2014) also agreed that utilitarian value is related to buyers' repeat purchase intention. They further explained that hedonic value and perceived risk play their parts in influencing the replacement decisions. For example, hedonic value is believed to have a positive association with consumers' repeat purchase behaviour (Chiu et al. ,2014).

More recently, in terms of product features, a research done by Riikonen, Smura and Toyli (2016) found that a product with high technological sophistication tend to have a longer replacement cycle. He also found that higher premium price for a product is not related to longer replacement cycle. Meanwhile, higher design complexity is related to higher chances for the replacement to take place as complex product designs are usually less durable and have shorter lifetime. Apart from product features, interaction-based benefits in the context of mobile features such as learning benefits and hedonic benefits are found to affect replace decisions (Alnawas and Aburub, 2016).

1.3.4. Typologies of Compulsive Replacement Behaviour

There were no previous research studies conducted on replacement typologies; thus, the buying typologies, which are closely linked to replacement typologies, are reviewed in the following section.

Buying is an essential activity in today's world. Edwards (1993) classified consumers according to the varying levels of spending and buying processes. He claimed that buying behaviour should lie along a continuum with ranges that designated as non-compulsive (apathetic), recreational, borderline (impulsive), compulsive and addicted buying. There is no previous research that particularly focused on studying replacement typologies. Thus, the review of this study is done based on Edward's (1993) buying typologies, which could give us the closest relation to the replacement typologies.

Non-compulsive buying behaviour is defined based on the consumer's spending and assumption to shop based on planned purchases of items when they are needed (Edwards, 1993). Other buyer types identified in the literature include "apathetic" (Reynolds, Ganesh & Luckett, 2002). According to Reid and Brown (1996), these consumers are not keen, or honestly no interest, in all aspects of shopping process and appear to abide instead of feeling joyful in the whole experience.

Guiry, Magi and Lutz (2006, p.75) proposed recreational buying as "shopping activity that is characterised by the shopper experiencing gratification from the shopping process per se, either in conjunction with or independent of the acquisition of goods and services". In the leisure literature, these leisure pursuits may result in possession of leisure identity (Guiry et. al., 2006).   Recreational buyers realised higher levels of leisure experience compared with normal buyers (Guiry et. al. 2006).

Impulse buying has received attention from researchers and theorists, which can be considered as a pervasive and distinctive phenomenon (Coley & Burgees, 2003). Consumers nowadays have more convenient access to impulse purchase with the trade marketing strategy that arranges their products in settings that attract impulse buying. The impulse buying alone induces over $4 billion in the annual sales volume in the United States (Kacen & Lee, 2002).

According to Schiffman and Kanuk (2000), compulsive buying is one type of abnormal purchasing behaviour regarded as the gloomy side of consumption. This is because compulsive buying has often been relating to a severe urge to purchase more than a person's necessities. Consumers with compulsive buying tend to make unconscious and impulse purchases caused by uncontrollable buying binges and these experiences often lead to depression (Ergin, 2008; Bani-Rshaid, & Alghraibeh, 2017). Similarly, Muller et. al. (2014) also found that compulsive buying is correlated with mood disorder and depression. Bani-Rshaid and Alghraibeh (2017) further confirmed that compulsive buying is related to mood disorders such as disappointment and guilt.

Addicted buyer is defined as a consumer who experiences a complication in managing impulsive and excessive buying behaviour, powerful urge and strong feeling to continuously purchase items until he has a great difficulty in resisting the impulse buying despite the negative consequences (Ureta, 2007; Edwards, 1993).

1.4. Research Framework

Due to globalization, the replacement phenomenon has spread from the America's middle market into a worldwide trend. Since there is no prior study on the mobile phone compulsive replacement behavior model could be found especially in Malaysia, this research will set a point of departure. The importance of the development of conceptual framework in this study is to guide the researcher in ascertaining the potential variables that influence mobile phone replacement behavior. The practical usage of this conceptual model is envisioned by the classification of the replacement typologies.

Most previous research fall into one of the theoretical frameworks including Theory of Consumption Values and Technology Acceptance Model. Thus, mobile phone replacement behavior viewed as not just a simple evaluation process owing to the varying application of theories and models in studying purchasing or replacement behavior. The study suggested

including the Theories of Consumption Values and Technology Acceptance Model in handling this complexity. These theories are combined into a unified framework of various disciplines including economics, sociology, psychology (Theory of Consumption Values) and Technology Acceptance Model (TAM). The main constructs of the related theories are utilised towards the investigation of mobile phone replacement behavior.

The following discussion outlines the underlying reasoning for using the Theory of Consumption Values and TAM in this study. Firstly, the consumption values used here are based on the market choice theory as proposed by Sheth, Newman and Gross (1991a, 1991b). The consumption values, which explain the reasons and motivations for an individual's purchase (Sheth, Newman and Gross, 1991) are applicable and appropriate to understand the tendency of compulsive replacement phenomenon among consumers in Malaysia as the different individual will be based on different values in determining their compulsive replacement decision. Moreover, the consumption values are included in the current study as the previous research only focused in a single value (functional or social value) in predicting the consumer durable purchase. However, Sheth et al. (1991) recommended that the consumer choice behavior is a function of multiple consumption values and each of the consumption values are independent. Hence, by segmenting the consumer's replacement behavior by using the multiple consumption values rather than by a single value would be more plausible as this is more reliability and has the ability in predicting the behavior (Sheth et al., 1991). For instance, Hansen (2008) claimed that the consumer values can affect the consumer shopping behavior.

The previous study has related the technology acceptance model by Davis (1989) in studying consumer's adoption and usage behavior. In light with the context of the study involving mobile phone, TAM was inherent to further supplement the conceptual model to explain tendency of compulsive replacement behavior. In this case, attitude towards technology was included as one of the contract in estimating the consumer's tendency of mobile compulsive replacement behavior.
Based upon the theoretical backgrounds of Theory of Consumption Values and TAM, the research framework of this study is depicted in the figure 1 below, which predicts the tendency of compulsive replacement behavior by consumption values, and attitude towards technology.
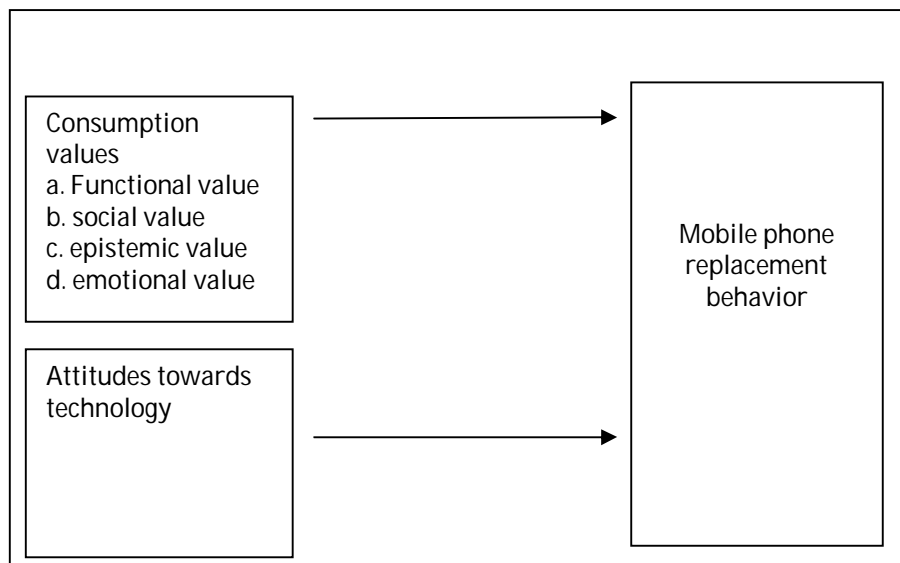

Figure 1: Research Framework

2. Materials and Methods

2.1. Sample and Procedure

Among the different generational cohorts (Baby Boomers, Generation X and Generation Y), generation Y are believed to have the highest and earliest exposure to modern technologies since young (Bolton et. al., 2013; Immordino-Yang et al., 2012; Park & Gursoy, 2012). The population for this study is Generation Y. Generation Y is the consumer group who was born between 1977 and 1994 (Noble, Haytko & Philips, 2009). Generation Y was chosen due to the following characteristics. First, high purchasing power. According to Noble et al., (2009) and Bolton et al. (2013), Generation Y possesses an unprecedented impact on the economy. This generation grows up in a consumption-driven society. As compared to another teen group in the United States, they have more disposable income (Nobel et al., 2009). Second, these are the group of people who are more affluent, more technology savvy, grew up with technology and have always been familiar with the internet, mobile phones and digital cameras (Spiro, 2006; Park & Gursoy, 2012). Thus, they are always armed with mobile phones, laptops and other electronic gadgets. Additionally, they prefer communicating via email and text messaging rather than face-to-face contact. Third, generation Y always wishes to develop new skills and embrace a new challenge (Spiro, 2006). Hence, generation Y is the most appropriate target group in this study after considering the interest of the research, which is focusing on the fast-

growing technology product-mobile phones. Other reasons for selecting generation Y are their increasing purchasing power in the marketplace and ability to develop new skills compared to the earlier generation.

In this study, the multi-stages sampling method was used to randomly select the research location and respondents. This is the approach that combines or incorporates several different sampling methods in order to overcome some weaknesses in the common sampling method (Muhammad & Halim, 2011). Thus, simple random sampling was used in this study by taking its advantages such as ease of computation and ability to represent the sample of interest. Firstly, the research locations (Kuala Lumpur, Putrajaya, Petaling, Klang, Selayang and Hulu Langat) were selected using the simple random sampling method. Then, from the selected research locations, the shopping malls included in the study were chosen by using the simple random sampling method. The store intercept quota sampling was then employed in this study in order to select respondents who have replaced their mobile phone at least once in their life. The store intercept technique was used in this study as the criteria mentioned above can be met quickly. In addition, the chance to get the right respondents who qualified for this survey was very high. According to the CRBE Malaysia report, the total population in the Klang Valley in 2011 was 6.1 million. Consequently, shopping malls become the appropriate place to conduct the current research.

2.2. Measures

The study was conducted by using the questionnaire which consists of socio-demographic background, consumption values scale, technology adoption, compulsive replacement behaviour scale and replacement patterns to determine the factors correlating with the consumers' replacement behaviour. The bilingual questionnaire, which was designed and written in both English and Malay languages, was used in this study after taking into consideration diversity of the cultural backgrounds and English proficiency level among Malaysians. The back-to-back translation was used, whereby the questionnaire was sent to a professional translation service to be translated from Malay language into English language to ensure the absolute quality and accuracy of the questionnaire. Verification of the translation of Malay language was based on its original meaning in English and conducted by a language expert at the Faculty of Modern Language and Communications in Universiti Putra Malaysia.

The compulsive replacement behaviour was adopted from the idea of Edward's compulsive buying behaviour. Meanwhile, the consumption values scale adapted from Sheth et al. (1991) was used to measure individual consumption values among the consumers. This research intended to use 20-item consumption values scale encompassing function value, social value, conditional value, epistemic value, emotional value and expressive value. The attitude towards technology scales were adopted from Technology Adoption Propensity Scales as proposed by Ratchford and Barnhart (2011). All the scales mentioned above were rated on the seven-point Likert-type scale ranging from 1 (strongly disagree) to 7 (strongly agree). Table 1 and Table 2 summarizes the demographic profile and replacement patterns of the respondents respectively.

Variables	Frequency	Percentage
Age Group		Mean:27.554
23-30	431	86.2%
31-40	69	13.8%
Ethnic		
Malay	223	44.6%
Chinese	181	36.2%
Indian	87	17.4%
Others	9	1.8%
Gender		
Male	222	44.4%
Female	278	55.6%
Level of Education		
no formal education	4	0.80%
primary school	4	0.80%
secondary school	80	16.00%
pre-university	56	11.20%
university	356	71.20%
Household income		Mean: RM4360
≤ RM1000	144	28.80%
RM1001 - RM3000	112	22.40%
RM3001 - RM6000	126	25.20%
RM6001 - RM9000	46	9.20%
≥RM9001	72	14.40%

Table 1: Frequency Distribution of respondents by socio-demographic and socio-economics

Variables	Frequency	Percentage %
Frequency of mobile phone replaced		
Less than 1 year	30	6
1-2 years	85	17
2-3 years	157	31.4
3-4 years	93	18.6
More than 4 years	135	27
Spending on mobile phone		
Less than RM500	59	11.8
RM500-RM1000	119	23.8
RM1000-RM1500	206	41.2
More than RM2000	116	23.2
Importance of phone		
Very unimportant	12	2.4
Unimportant	3	0.6
Somewhat important	166	33.2
Important	153	30.6
Very important	166	33.2

Table 2: Frequency Distribution of the respondents by replacement patterns

2.3. Data Analysis Technique

Cluster analysis was used to investigate the objective of this study in order to develop the typology of consumers' mobile phone replacement behaviour. Cluster analysis is a multivariate classification technique that classifies a set of objects into two or more mutually exclusive groups based on a combination of selected attributes which increases the common characteristic of cases within each cluster (Hair et al, 2010). In order to achieve to achieve a more favourable solution of cluster analysis, a combination approach that incorporated both hierarchical and non-hierarchical clustering methods was used in developing consumers' replacement behaviour typologies.

Consumers' mobile phone replacement typologies were then categorised based on the respondents' profiles in terms of socio-demographic, socio-economic backgrounds and replacement pattern using cross tabulation. Chi-squared test of independence was used to identify the existence of significant differences between the clusters.

Prior to conducting data analysis, Confirmatory Factor Analysis (CFA) was the first step in data preparation. Confirmatory Factor Analysis for the individual construct was employed for three major purposes, which were testing for model fit, testing for convergent validity and testing for construct reliability.

Goodness of fit indices (GOF) are the measures used to determine the overall fit of the hypothesised model (Hair et al., 2010). Results in Table 3 show that all of the constructs achieved at least 3 fit indices. Standardised factor loadings for all the items had the factor loadings of more than 0.5 (Hair et al., 2010). In this study, the AVE for all the constructs was beyond the minimum threshold of 0.50 which range from 0.518 to 0.74. The high AVE (>0.5), indicated a high convergent validity in the model (Fornell & Larcker, 1981). Additionally, the construct reliabilities for all the constructs were high with the values ranging from 0.795 to 0.945. This revealed adequate internal consistency with the values greater than 0.70 (Hair et al., 2010).

3. Results and Discussion

3.1. Two-Stage Cluster Analysis for Developing Consumers' Replacement Typologies

A two-stage cluster analysis was employed to test the objective of the study in order to establish consumers' replacement typologies based on the consumption values and attitudes towards technology. The consumption values consisted of functional value, epistemic value, social value and emotional value which were validated in the confirmatory factor analysis as discussed in the earlier chapter. In order to classify the replacement typologies, two-stage cluster analysis which involved hierarchical and non-hierarchical methods was used in the study.

Table 3 showed the agglomeration schedule of the last 10 stages. The percentage of change in agglomeration coefficient revealed about the increase in cluster dissimilarity. The highest change in dissimilarity helped the researcher to decide the numbers of clusters existed in the study. The agglomeration coefficients showed that there was high percentage from 3 clusters to 2 clusters (29.44%) as well as from 2 clusters to 1 cluster (52.03%). Thus, two-cluster and three-cluster solutions were considered to be applied in further analysis.

Number of Clusters	Stage	Agglomeration coefficients	Percentage of change in agglomeration coefficients
10	490	22463.76	4.51
9	491	23869.62	6.26
8	492	25276.99	5.90
7	493	27253.91	7.82
6	494	30467.19	11.79
5	495	34713.82	13.94
4	496	39085.63	12.59
3	497	46304.06	18.47
2	498	59937.53	29.44
1	499	91121.08	52.03

Table 3: Agglomeration Coefficient of Ward's Cluster Analysis of the Last 10 Stages

Two-cluster solution and three-cluster solutions which were predetermined in the earlier stage was then applied in K-means clustering. Based on the analysis, K-means clustering of three-cluster solutions produced a more meaningful and interpretable solution. The two-cluster solutions did not add much meaning for the segment segregation.

Factors	Cluster Means			F-value
	Cluster 1	Cluster 2	Cluster 3	
	Apathetic replacer	Pragmatic replacer	Enthusiastic replacer	
	N=102 (20.4%)	N= 153(30.6%)	N= 245(49%)	
Functional value	-1.06	0.39	0.20	105.003****
Epistemic value	-1.27	0.09	0.48	200.374***
Emotional value	-1.33	0.27	0.39	209.218***
Social value	-0.85	-0.74	0.82	468.081***
Attitude towards technology	-1.06	-0.15	0.54	150.911***

Table 4: Segmentation of consumers
***Significant at p≤0.0001

3.2. Segmentation of replacers
Referring to the final cluster centers, the consumer replacement typologies was performed. There were three consumer replacement typologies, namely enthusiastic replacer, apathetic replacer and pragmatic replacer.

3.2.1. Enthusiastic Replacer
The enthusiastic replacer constituted 49% of the respondents in the study. They were categorized to have high ratings for almost all the attributes. Among all the attributes described in the table, this group of people had the highest ratings in technology adoption, epistemic, emotional and social values. This indicated that this group of people were highly motivated to adopt in any new technology. Besides that, this group of people were also highly affected by the social influence, subjective feeling and curiosity seeking via the replacement of mobile phone.

3.2.2. Pragmatic Replacer
A total of 30.6% of respondents were classified in the pragmatic replacer group. These replacers had moderate ratings in almost all the attributes except for functional value. Having the moderate ratings of the attributes and high rating in functional value implied that this group of replacers were more rational and practical when considering to replace their mobile phones.

3.2.3. Apathetic Replacer
The study showed that only (20.4%)of the respondents were classified as apathetic replacers. This group of replacers had the lowest ratings in all the attributes. Having the lowest ratings of all the attributes implied that this group of replacers might replace their mobile phones out of necessity rather than being influenced by the attributes that were mentioned earlier.

Moving on to the F-values obtained in the results, the F-values obtained were very large ranging from 105 to 468 of the consumers with the p-value of p=0.000 which was very much smaller compared to the alpha value of 0.001. With that, the internal validity of cluster analysis was confirmed due to the significant differences existed in the three clusters.

Factors	Cluster Means			F-value
	Cluster 1	Cluster 2	Cluster 2	
	Apathetic replacer	Pragmatic replacer	Enthusiastic replacer	
	N=102 (20.4%)	N= 153(30.6%)	N= 234(49.0%)	
Compulsive replacement behavior	42.27	42.07	58.30	79.918***

Table 5: Results of predictive validity tests using compulsive replacement behavior
***Significant at p≤0.0001

In order to validate the predictive validity of the cluster solutions, the three-cluster solution was compared with the consumers' compulsive replacement behavior. This is in line with Nair and Bottomley (2004) suggestions that predictive validity can be achieved by testing the cluster members with information on other behaviors such as demographic information or buying behavior. The Anova results shown in Table 5 portrayed that apathetic and pragmatic replacers were less likely to portrait compulsive replacement behavior while enthusiastic replacers showed the highest ratings on the compulsive replacement behavior. The F-value obtained was large and the p-value was significant with p=0.000. Hence, these findings were further enhanced in order to ensure the validity of the cluster solutions.

3.3. Profiling Consumer Mobile Phone Replacement Typologies Based on Socio-demographic, Socio-Economic and Replacement Pattern Characteristic

The results of consumer mobile phone replacement typologies were then profiled based on the respondents' socio-demographic and socio-economic backgrounds (gender, ethnic, education level and household monthly income) and replacement pattern (frequency of replace, importance of phone and spending on phone) using cross tabulations. Chi-squared Test of Independence (Table 6) was used to identify the existence of the significant differences between the three clusters. Almost all characteristics were significant except for the educational level. The chi-square test of replacer cluster and gender was significant with p at 0.000 and the Cramer's V at 0.177 which suggested that the relationship was weak. Meanwhile, the chi-square test of independence for replacer clusters and ethnic was found to be correlated with p at 0.003. However, the cramer's V value (0.153) found for that relationship to be rather weak. As for the relationship between household income and replacer clusters, the results showed that it was significant with p at 0.000 and Cramer's v at 0.169 which suggested that the relationship was rather weak. The results were consistent with the studies done by previous research whereby different socio-demographic backgrounds might display different buying behaviours (Jalees, 2007; Yurchisin and Johnson, 2004). Higher income group tend to involve in luxury consumption than lower income group (Solomon, 2011).

Moving on to the replacement pattern, the relationships between replacer clusters, frequency of replacement of phone, spending in mobile phone and importance of mobile phone were found to be significant with p at 0.000. Nevertheless, based on the results of Cramer's v, the relationships between frequency of replacement, spending in mobile phone, importance of mobile phone and replacer clusters were rather weak.

Characteristics	Freq	Frequency(Percentages)			*p*	CV
		Cluster 1	Cluster 2	Cluster 3		
		Apathetic replacer	Pragmatic replacer	Enthusiastic replacer		
		N=102(20.4%)	N= 153(30.6%)	N= 245(49%)		
Gender						
Male	222	48 (22%)	48 (22%)	126 (56%)	0.000***	**0.177**
Female	278	54 (19%)	105 (38%)	119 (43%)		
Ethnic						
Malay	223	31 (14%)	83 (37%)	109 (49%)	0.003**	**0.153**
Chinese	181	52 (29%)	45 (25%)	84 (46%)		
Indian	87	19(22%)	20 (23%)	48 (55%)		
Others	9	0	5 (56%)	4 (44%)		
Educational Level						
No formal education	4	2 (50%)	0	2 (50%)	0.214	**0.104**
Primary school	4	0	0	4 (100%)		
Secondary school	80	20 (25%)	20 (25%)	40 (50%)		
Pre-university	56	12 (21%)	21 (38%)	23 (41%)		
University/college	356	68 (19%)	112 (31%)	176 (49%)		
Household income						
≤RM3000	256	60 (23%)	94 (37%)	102 (40%)	0.000***	**0.169**

Characteristics	Freq	Frequency(Percentages)			p	CV
		Cluster 1	Cluster 2	Cluster 3		
		Apathetic replacer	Pragmatic replacer	Enthusiastic replacer		
		N=102(20.4%)	N= 153(30.6%)	N= 245(49%)		
RM3000-RM6000	126	26 (21%)	35 (28%)	65 (52%)		
≥RM6000	118	16(14%)	24 (20%)	78 (66%)		
Frequency of replace						
<6 months	9	0	2 (22%)	7 (78%)	0.000***	**0.180**
6 months-1 year	21	1 (5%)	6 (29%)	14 (67%)		
1-2 years	85	15 (18%)	23 (27%)	47 (55%)		
2-3 years	157	26 (17%)	69 (44%)	62 (39%)		
3-4 years	93	23(25%)	27 (29%)	43 (46%)		
>4 years	135	37 (27%)	26 (19%)	72 (53%)		
Spending in replacing phone						
<RM500	59	11 (19%)	15 (25%)	33 (56%)	0.005**	**0.158**
RM500-RM1000	119	31 (26%)	49 (41%)	39 (33%)		
RM1000-RM1500	206	33 (16%)	55 (27%)	118 (57%)		
RM1500-RM2000	72	18(25%)	25 (35%)	29 (40%)		
>RM2000	44	9(20%)	9 (20%)	26 (59%)		
Importance of phone						
Very unimportant	12	4 (33%)	1 (8%)	7 (58%)	0.000***	**0.220**
Unimportant	3	0	1 (33%)	2 (67%)		
Somewhat important	9	1 (11%)	2 (22%)	6 (67%)		
Neutral	61	30 (49%)	17 (28%)	14 (23%)		
Somewhat important	96	19(20%)	34 (35%)	43 (45%)		
Important	153	28 (18%)	48 (31%)	77 (50%)		
Very important	166	20(12%)	50 (30%)	96 (58%)		

Table 6: Socio demographic, socio economics and replacement pattern of the three clusters

Apathetic Replacer	Pragmatic Replacer	Enthusiastic Replacer
Replacer who shows little interest in replacing	Replacer who is practical and rational in replacing	Replacer with great emphasis of the consumption values and is highly motivated towards new technology
-likely to be female -mostly chinese -mostly low income -longer replacement cycle -moderate spending in mobile phone -neutral on importance of phone -low tendency of compulsive in replacement of mobile phone	-likely to be female -mostly malay -moderate income -moderate replacement cycle -moderate spending in mobile phone -high importance of phone -low tendency of compulsive in replacement of mobile phone	-likely to be male -mostly Indian and malay -mostly high income -shorter replacement cycle -high spending in mobile phone -high importance of mobile phone -likely to have tendency of compulsive in replacement of mobile phone

Table 7: Thumbnail sketches of the replacers' typologies

4. Conclusion and Implication

This study has confirmed three distinguishable clusters namely apathetic replacer, pragmatic replacer and enthusiastic replacer in terms of consumption values and attitudes towards technology. Besides, the profiling results also confirmed that the sample in the study is heterogeneous in nature where there was significant difference in terms of replacement patterns and most of the socio-demographic background among the three clusters. The profiling and examination of typologies based on the conceptual framework assist to provide better picture of the study of replacement behavior.

Based on Table 7, the typologies of replacers could be summarized based on the following characteristics. Apathetic replacer normally showed little interest in replacing, was likely to be female, mostly had low income, had longer replacement cycle, had moderate level of spending in mobile phone, being neutral on importance of phone and had low tendency of compulsive in the replacement of mobile phone. Pragmatic replacer, on the other hands, was practical and rational in replacing, was likely to be female, had moderate level of income, had moderate replacement cycle, had moderate level of

spending in mobile phone, placed high importance on mobile phone and had low tendency of compulsive in the replacement of mobile phone. Meanwhile, enthusiastic replacer had great emphasis of the consumption values and was highly motivated towards new technology, was likely to be male, mostly had high income, had shorter replacement of mobile phone cycle, had high level of spending in mobile phone, placed high importance on mobile phone and was likely to have tendency of compulsive in the replacement of mobile phone. The finding is interesting as it suggests that Generation Y consumers in Malaysia are mostly classify as enthusiastic replacer who are likely to have tendency of compulsive in replacing their mobile phone.

The findings of the study could provide some impacts and applications to various stakeholders since it has widened the horizon of understanding of the replacement typologies. The contributions of this study could be viewed from the theoretical and practical perspectives. Previous research has focused largely on the consumer values and consumer choice behavior (Kim et. al., 2011); however, little effort has been done to research on the replacement behaviour. This study investigated the network of consumption values and attitudes towards technology which would affect mobile phone replacement behaviour. Besides that, the study of the dimensions of consumption values (functional value, epistemic value, emotional value and social value) and attitudes towards technology and replacement behaviour be able to generate some useful insights into the theory and research development of consumers' behaviour within the spectrum of consumer science (Erasmus et al., 2001).

Furthermore, three replacers' typologies were developed based on the research framework derived from theory of consumption values which includes of consumption values and attitudes towards technology assist to face the critics of lacking of theoretical consolidation in variables selection in segmentation studies (Dibb & Simkin, 2009). According to Singh (1990), estimating a cluster using a theoretically derived framework could generate more explanatory power to the research study.

From the consumers' perspective, the typologies analysis showed that enthusiastic replacers tended to put emphasis on the consumption values (functional, social, epistemic and emotional value), were motivated towards technology adoption and likely to be compulsive in replacing their existing mobile phones. In fact, consumers with higher tendency of compulsive mobile phone replacement behaviour would often engage in impulse replacing and uncontrollable replacing binges. Such attitudes could bring negative impacts on individuals' financial wellness and lead to personal bankruptcy. By realising the factors contributed to compulsive replacement behavior, severe enthusiastic replacers could consult expert financial counselors in order to improve their purchasing decisions. The financial counselors would give proper assistance and appropriate treatment to those enthusiastic replacers in order to overcome their disorders. More importantly, these consumers could be taught to learn the root of their excessive purchasing and replacing of mobile phones, find techniques to reduce their overspending, and make good purchasing decision. Besides that, the financial counselors could help consumers to gradually manage their compulsive replacement behaviour by creating budget when making their replacement decisions.

From the marketing perspectives, the study also found that most of the consumers were pragmatic and enthusiastic replacers. The study provides a mechanism for understanding the characteristic for each segment. Marketers might be aware of consumers' buying trend and thus develop suitable marketing strategy by implementing sales technique on potential customers based on their replacement tendencies. Marketers could develop their market segmentation based on consumers' tendency to buy their products. Based on these, marketers could specifically target people of high compulsivity and high impulsion in order to increase their sales and profits.

5. Limitation and Future Studies

There are several limitations of the study. the presence of other factors such as personal characteristics and materialism might influence replacement behavior. Due to time constraint and budget constraint, this study focused exclusively on consumption values and attitudes towards technology in order to explain the replacement behavior. Due to lack of literature about the two variables employed to investigate the replacement behavior, these two main variables deserved to get more attention.

Apart from that, this study only included the generation Y and most of the respondents in this study had at least secondary or higher educational level. Respondents with different stages of life cycle would generate different results. Future researches are suggested to conduct more representative pools that can reflect broader demographical characteristics which will increase additional credibility to the findings of the study. In this case, further research can be designed to compare different levels of compulsive mobile phone replacement behavior among different age groups of generation which can help to investigate whether different life stages or life events serve as important factors that influence endorsement of compulsive mobile phone replacement behavior.

Last but not least, different methods such as qualitative research can be used to study the patterns of the tendency of compulsive replacement behavior in future studies. The measurement of variables used in this study was adopted and adapted from researchers in western countries. Future studies may use measurement that is suitable with Malaysian context in order to further improve on the current findings.

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