

## Consumer Behaviors toward Usage of Smartphone in Malaysia

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**Abstract.** The purpose of this paper is to present the result of a survey on the attitude and behavior of consumers toward the various types of smartphone usages such as application software, e-mail, Internet browsing, ringtones, and other mobile contents. The data were collected through survey questionnaires filled by 1814 individual users across the major cities in Malaysia. The findings indicated that male and young consumers generally are greater target market. Moreover, the “smartness” of smartphone yet to be fully exploited, most of the usages are limited to core functionalities of mobile phone such as making phone call and SMS. In terms of practical contribution, this study provided the overview of mobile contents market opportunities in Malaysia that enables practitioners such as service providers, application developers, and mobile contents marketers to derive effective marketing strategies, and to serve consumers better. This study also provided exploratory information for the better understanding of the domain, thus enable future research to focus specific problem area.

**Keywords:** Mobile phone, Consumer behaviours, Market survey, Exploratory Study

### 1. Introduction

Most of the mobile phones nowadays are addressed as ‘smartphone’, as they offer more advanced computing power and connectivity than a contemporary mobile phone. Literately, a smartphone is a handheld computer, as it is powerful enough to deliver various functionalities comparable to a computer. The releases of dual-core processors smartphone recently have further reaffirmed this assertion.

Along with the smartphone fundamental capabilities to make voice call, video call, SMS, and MMS, smartphones have been repositioned as a “new information medium” [1]. In other words, smartphones have extended list of information processing functionalities such as managing personal time schedule, accessing Internet contents, editing documents, utilizing location-awareness function, and many other exciting applications. All these functionalities are delivered through the software installed on the smartphone. It is stressing that the ever increasing importance of mobile software and other mobile contents are solicited by the prevalent of smartphone.

The market opportunities for mobile phone software and mobile contents are huge and attractive. For instance, the sales for ringtone download in Europe and Japan totaled US\$5 billion in 2003 [2]. Moreover, it is a global size fair market which not only can be accessed by major players, but also small and agile developers. The winning factor in this market is to be flexible enough to meet or surpass the requirements of consumers with attractive pricing strategy. Thus, it is important to understand the behavior or attitude of consumers toward particular kind of mobile software.

### 2. Problem Statements

Despite the sheer size of mobile software market, the existing body of knowledge is still less and far between for the adequate understanding of the consumers’ attitude toward the use of various mobile software

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[3]. Thus the purpose of this paper is to examine the attitude of consumers toward different kinds of mobile software ranging from email, games, applications, ringtones, and others. This paper provides an overview of the mobile software market and consumer attitudes in Malaysia. In which this information is particularly valuable for mobile software developers and marketers in shaping their marketing strategies in a more effective manner. Additionally, this study provides the fundamental information which future works be built on to derive at specific problems.

### 3. Research Methodology

#### 3.1. Overview of Methods

In order to collect generalizable data to represent the whole population from the samples, questionnaire survey is adopted as a data collection method. Additionally, questionnaire survey is a common method used in similar researches [2, 4, 5]. This study collects primary data through the questionnaire survey that targets at individual users. Subsequently, the data collected is analyzed using appropriate non-parametric analysis method and the data is presented in an intuitive and insightful presentation format.

#### 3.2. Subject and Procedure

The data used in this study were collected via both online and offline self-administrated survey. The data was collected from the publics across the main cities in Malaysia. Publics in main cities are selected as the respondents because they constitute the major propositions of smartphone user in Malaysia. Hence, it implies that the purposive sampling method is adopted in this study.

At the end of data collection process, a total of 1814 sets of questionnaire have been successfully collected and usable. By acquiring this large sample size, the data collected is speculated to have a low level of random errors, and the responses should well distributed over all answer categories [6]. Thus the quality of data is considered as fairly good, and suitable for data analysis.

### 4. Data Analysis

#### 4.1. Profile of Respondents

Demographic variables indicate the profile of respondents, in which also could be helpful for the understanding the subsequent analysis outcomes. Table 3 shows the demographic of respondents. The statistics show approximately 90% of respondents is below 36 years old. This result is consistent with previous studies which found that majority of smartphone users are teenagers and younger adults [2].

Table 1. Profile of Respondents

Item	Frequency	Percentage
<b>Gender</b>		
Male	947	52.2
Female	867	47.8
Total	1814	100
<b>Age</b>		
16 and Less	77	4.2
17 – 26	1178	64.9
27 – 36	378	20.8
37 – 46	101	5.6
47 – 56	64	3.5
More than 57	16	0.9
Total	1814	100
<b>Education level</b>		
Secondary	740	40.8
Bachelor	856	47.2
Master	94	5.2
Ph. D	17	0.9
Others	107	5.9
Total	1814	100

<b>Occupation</b>		
Government	118	6.5
Professional	165	9.1
Self-Employed	146	8.0
Freelancer	793	43.7
Student	176	9.7
Executive	29	1.6
Management	143	7.9
Retired	71	3.9
Unemployed	22	1.2
Others	151	8.3
Total	1814	100

## 4.2. Preferences of Application Software

As aforementioned, it is the application software that actually makes the smartphone to be smart. Nonetheless, its feature is of no use if it is not being utilized. Table 2 summarizes the trend among the respondents on the utilization of software applications. The most utilized application software is music player, calendar, picture viewer, and video player. Moreover, GPS, dictionary, and games received moderate attention in the utilization. On the other edge, it indicates that finance manager, e-wallet, and personal information manager are not common among respondents. This might be because the consumers are yet to have faith and confidence to store sensitive information in the mobile phone. Thus, it signalsizes the importance of user education about the benefit of E-wallets.

Table 2. Utilization of Software Applications

Type of Software Applications	Percentages
Music Player	64.6%
Calendar	58.7%
Picture Viewer	54.1%
Video Player	53.4%
GPS	46.9%
Dictionary	46.9%
Games	44.0%
File Explorer	25.2%
Theme manager	24.8%
Weather	22.2%
Backup	21.6%
Keyboard	21.3%
e-Books	18.6%
Finance Manager	13.0%
E-Wallets	9.8%
Personal Information Manager	7.3%
Others	2.4%

## 4.3. Preferences on Mobile Contents

Other than application software, there are many other mobile contents that constitute the important portion of mobile opportunities. Table 3 indicates the percentage of respondents that are willing to pay for particular type of mobile content. The statistics imply that most consumers are willing to pay for application software, followed by ringtones and games. The possible explanation of the high acceptance of application software is that consumers perceive software as important and useful elements to their smartphone. In which, importance and usefulness are well-known factors that contribute to the acceptance of users. On the other hand, the result shows that E-book and video clips are the contents that consumer least willing to pay for.

Possible reason might be that such contents could be downloaded for free using a computer, which can then be used in smartphone.

Table 3. Popularity of Mobile Contents

Applications	Percentages
Application software	41.8
Ringtones	33.8
Games	32.0
Wallpaper and Graphics	25.8
Video Clips	11.2
E-Book	8.5
Others	5.4

The crosstab analysis indicates that more male consumers (47 percent) are willing to pay for application software compared than their female counterpart (37 percent). Previous studies have found that males have more interests and skills in computer software [7]. This study further extends the finding to the context of mobile application software. Additionally, according to Fig. 1, about 43 percent of consumers from every age group are willing to pay for software applications, with exception of those respondents who are younger than 16 years old (18 percent). This implies that consumers with purchasing power or incomes have a higher tendency to purchase application software.

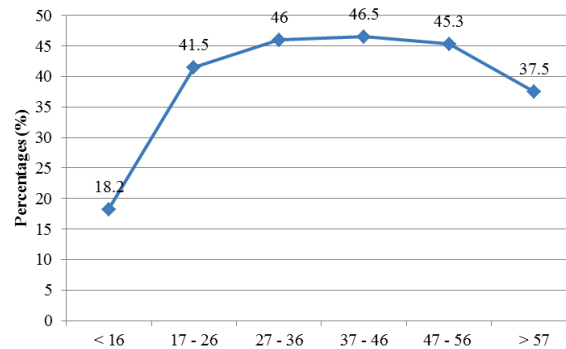


Fig. 1: Crosstab Software Application by Ages

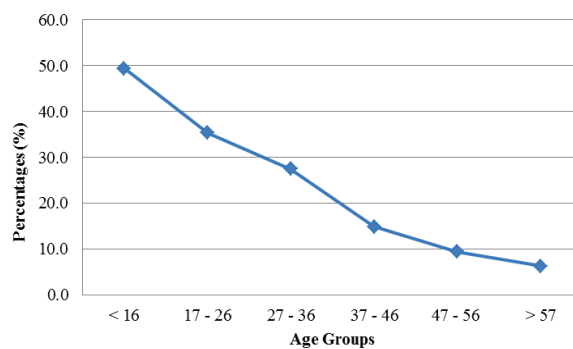


Fig. 2: Crosstab of Games by Age Groups

Furthermore, the crosstab analysis between games and age implies that the willingness to pay for games is decreased when the age increases. This further reaffirmed that the major consumers of mobile game are teenagers, as shown in Fig. 2. Additionally, the data analysis shows that 58 percent of male respondents willing to pay for game, while only 42 percent of female respondents willing to do so. This finding implies that male consumers are greater market opportunities for mobile game.

#### 4.4. Preferences on the Pricing

Table 4 shows the result of a question asking respondent regarding the price they are willing to pay for a useful application. Based on the statistics, majority of the respondents (approximately 40%) willing to pay

RM5.00 or less for an application, whereas 31% of the respondents not willing to pay at all. This implies that the application selling price should be controlled within the price limit in order to get a higher number of demands

Table 4: Preferences on Software Pricing

Options	Percentages
Not willing to pay at all	31.1
RM5.00 or less	40.4
RM10.00	15.8
RM20.00	10.9
RM50.00 or more	1.8

#### 4.5. Behaviors in Different Smartphone Usages

As aforementioned, the understanding of the consumers' attitude and behavior toward various types of smartphone usages are important. This section presents the respondents' attitude and behavior toward the Internet browsing, e-mail, games, and blogging through smartphones.

##### 4.5.1. Internet Browsing

Fig. 3 illustrates the frequency of using smartphone to access Internet. Overall, about 75% of the respondents have experiences of browsing the Internet using their smartphones. This implies that consumers in Malaysia are considerably opened to accept mobile Internet browsing. Additionally, the crosstab analysis shows that more male respondents browse the Internet via smartphone than their female counterparts.

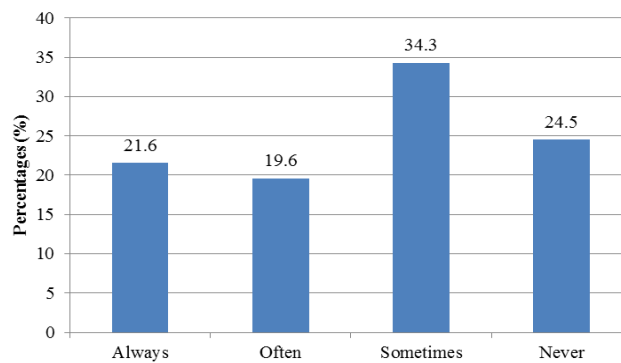


Fig. 3. Frequency of Accessing Website via Mobile

##### 4.5.2. E-mail Access via Smartphone

Fig. 4 illustrates that almost half (44.3%) of the respondents do not have any experience in accessing e-mail through smartphone. This number implies that this usage has not yet gain the acceptance of major consumers. The crosstab analysis indicates about 7% more male respondents use e-mail compared to female respondents.

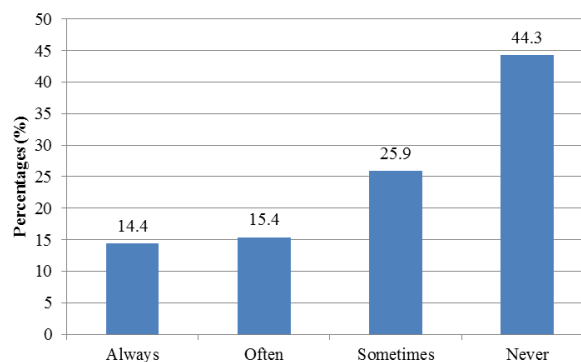


Fig. 4. Frequency of Using Mobile E-mail

##### 4.5.3. Gaming using Smartphone

As mobile games are one of the major market opportunities, it is paramount to see the way consumers react and utilize the mobile games. Fig. 5 shows that mobile games have a higher acceptance level among the respondents compared to e-mail, in which approximately 84% of the respondents have experience of gaming via their smartphones. Moreover, as similar to the trend in Internet browsing, the analysis also indicates that male respondents play mobile games slightly more frequent than their female counterparts.

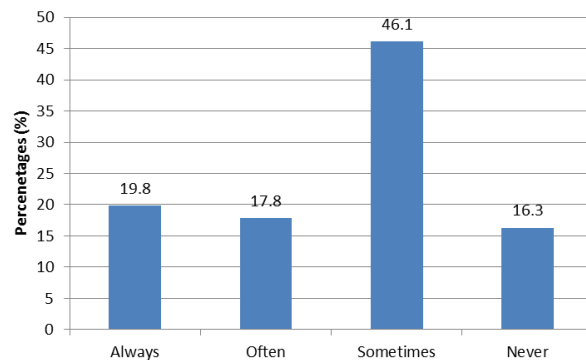


Fig. 5. Frequency of using game via Mobile

#### 4.5.3. Blogging via Smartphone

Blogging have become a widely accepted communication means in the context of Internet usage. With regard to this, it is interesting to find out the acceptance of blogging using smartphone. The finding as shown in Fig. 6 indicates that blogging through smartphone is yet a common practice for users. About half (47%) of the respondents have not tried to blog by using their smartphones, whereas only 21 percent of respondents do so in regular basis. The considerably low acceptance of this practice may due to the inconveniency and inefficiency in utilizing smartphone to write a blog. Blogging can be done faster and easier by using a computer. Previous study has found ease-of-use and usefulness are the main factors that affect the adoption of certain technologies [7, 8]. This study extends the finding to the context of smartphone application software.

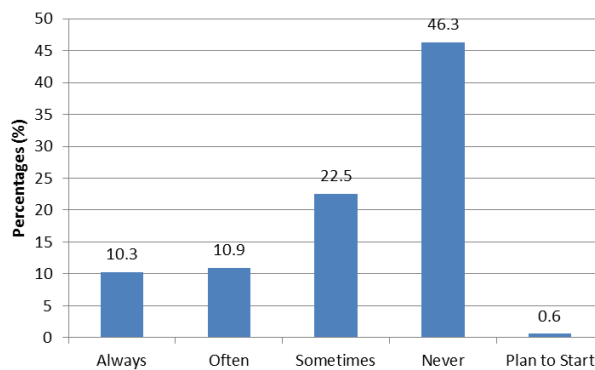


Fig. 6: Frequency of Blogging via Smartphone

## 5. Summary

As the overall findings, this study found that generally male consumers have higher acceptance toward various mobile contents such as games, application software, e-mail, and Internet browsing. On the other hands, female consumers have a higher tendency to adopt or purchase ringtones and wallpapers, which are meant to decorate or personalize their smartphone. In other words, male consumers might prefer those mobile contents that are practical and useful to fulfill their information needs. Occupations and education level are found to have no association with the behaviors or attitudes toward the usage of smartphone. This would also suggest that future works can focus more on the demographic variables such as age and gender that are more influential in usage of smartphone.

By providing the associations between various demographic variable and smartphone usages, this study provides practitioners the niche information to strategize their marketing plan. As this study is to provide

exploratory study on the domain of smartphone usages, future works can focus on specific smartphone usage (such as blogging) to develop in-depth and empirical understanding on the topics.

## 6. Acknowledgements

This study is supported by MSC Malaysia and Universiti Sains Malaysia. We would like to acknowledge to all students who were involved in this study.

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