The Demand for Smartphones Among Students in University of Ibadan

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Abstract
This study investigates the determinants for demand for smartphones among students in the University of Ibadan, Nigeria. Survey research design of ex-post-facto type is employed. After necessary examination of some variables of interest, the study argued that price, students’ perception, and smartphone design and features such as operating system, e-mail client, social media connectivity, keyboard, and size/weight determine demand for smartphone. While, income and smartphone design and feature such as back-ups, addresses and so on do not determine demand for smartphone. From the result it is obvious that the most important factor when considering smartphone purchase by students is smartphone designs and features.

Key words: Smartphones; Survey; Determinants; Demand; University of Ibadan

INTRODUCTION
In the recent time, the use of smartphones among students is very popular. The students identify the device to be an important instrument as it contributes positively to their academic pursuit, as well as update their social status. A smartphone is a mobile phone with more advanced computing capability and connectivity than basic feature phones. Early smartphones typically combined the features of a mobile phone with those of another popular consumer device, such as a personal digital assistant (PDA), a media player, digital camera, or a GPS navigation unit. Modern smartphones have all of those features plus the features of touchscreen computer, including web browsing, Wi-Fi, and third party applications such as hotspot (Smartphone, Wikipedia Article, 2014).

The development of smartphone could be traced to the advancement in mobile phone industry. The early years in the 1970s were characterised with devices that are basically used as telephone. As recorded in Smartphone, Wiki (2014) — the first mobile phone to incorporate PDA features was an IBM prototype developed in 1992. A refined version of the product was marketed to consumers in 1994 by BellSouth under the name Simon Personal Communicator. The Simon was the first device that can be properly referred to as smartphone, even though the term was not yet coined. The term smartphone first appeared in 1997, when Ericsson described its GS 88 “Penelope” concept as a smartphone. After series of efforts by other brands such as Nokia and Qualcomm, in the early 2000, the Ericsson R380 was released by Ericsson Mobile Communications and was the first device marketed as a smartphone. It combined the functions of a mobile phone and a PDA, supported limited web browsing with a resistive touchscreen utilizing a stylus”. After this time, into the present, several companies such as Apple, BlackBerry and Samsung to mention a few have developed tremendously on this device. At present in Nigeria, some of the popular smartphones are Techo, Samsung, Nokia, BlackBerry, HTC and Apple iPhone among others.

The popularity of smartphones among adults worldwide is increasing. This platform serves as major computer equipment among students, especially in developing countries as it affords them cheap and convenient internet usage and a good diary for keeping their records. As stated by Walsh and White (2006),
“Smartphones are no longer perceived as luxury but necessity in people’s daily life”. The growth in its demand has increased significantly as developing countries which are one time not a major consumer of the product, increased consumption as technology improves and accommodate this part of the world. For instance, Kelly (2009) stated that in 2001 mobile phone subscriptions were less than a billion worldwide with the majority of the subscriptions from the developed countries; where Rebello (2010) stated that at the end of 2010, mobile phone subscriptions are expected to reach five billion worldwide, equalling 73.4% of the earth’s population. This increase can be as a result of the subscriptions from developing countries outnumbering that of the developed ones; also, in another claim by Nielsen Mobile Media Report (2012), “Smartphone usage in the US has also exploded, jumping from just 18% in the third quarter of 2009 to 44% during the third quarter ending in October 2011”.

The usefulness of smartphone in the recent times is overwhelming. For instance, in 2011, it was found out that camera-equipped smartphones are gaining on traditional cameras in the percentage of photos and videos taken with them. A study said smartphones took 27% of photos in 2011, up from 17% last year. Regular cameras account for 44% (Ogg, 2011). Also, Rao (2012) stated that “another study conducted in September 2012 concluded that 4 out of 5 smartphone owners use the device to shop”.

The use of smartphones among students recently has contributed to their lives in various forms. Academically, wireless internet services that enables access to search engine sites such as Google and Ask has contributed positively to academic pursuit; and socially, access to social media sites, such as Facebook, WhatsApp, Twitter and so on has made connection to the rest of the world easy and interesting to the students. In addition, multimedia and entertainment services like camera, music, games, and so on served as good companion to the students.

Several studies in the past have tried to investigate this in different part of the world. For instance, variables such as brand, convenience, dependency, price, product feature, social influence, and social needs as determinants of smartphone demands have been investigated (Suki & Suki, 2013; Lay-Yee et al., 2013; Ding et al., 2011). But which of the above mentioned variables or any other one has the greatest impact on the decision to purchase smartphone? Against this background, this study aims at investigating the determinants of smartphones among university of Ibadan students in Nigeria by answering the following research questions: Is there correlation between price and smartphone demand? Is there correlation between students’ allowance and smartphone demand? Is there relationship between students’ perception and smartphone demand? Do other factors like smartphone design and features relate to the demand for smartphone?

1. LITERATURE REVIEW

Mobile technologies are playing an increasingly important role in college students’ academic lives. Devices such as smartphones, tablets, and e-book readers connect users to the world instantly, heightening access to information and enabling interactions with others. Applications that run on these devices let users not only consume but also discover and produce content. As such, they continue to transform how college students learn, as well as influence their learning preferences, both within and outside the classroom (Chen & Denoyelles, 2013).

Smartphones today have features that are comparable to an average computer, and this hand-held mobile device can engage students in far more dynamic ways than a laptop or tablet computer (Hingorani et al., 2012). According to Barot et al. (2014), “Smartphones are therefore becoming a more integrated and prevalent part of people’s daily lives due to their highly powerful computational capabilities, such as email applications, online banking, online shopping, and bill payments”.

The literature is replete with the drivers of demand for smartphones among college students and this comprises of various motives such as price, brand, product features, dependency, convenience and social influence (Osman et al., 2012; Lay-Yee et al., 2013; Barot et al., 2014). According to Lee-Yee et al., information on smartphone consumers’ preferences and its usage is important for both academics as it provides them the foundation where they further design their research, and practitioners as such information can be useful for their marketing strategies and plan for future directions.

Among the factors found to have influenced demand for smartphones in the literature is price (Chow, 2011). “Price is the amount of money charged for a product or service, or the sum of the values that customers exchange for the benefits of having or using the product or service” (Kotler & Armstrong, 2010). Price was found to have a significant impact on the purchase decisions of smartphone among young adults in Utar, Perak and Malaysia (Chew, 2012).

The second factor is the brand which is considered to be a name, design or features that distinguishes a particular product from others. It is considered to determine what the product meant for the consumer. Hence it is the most valuable asset of the producer because it has a direct influence on consumers’ preferences (Azad & Safaei, 2012). According to (Farzana, 2012), Brand influences consumer behaviour and it impacts are more on female than male. Also, low income earners give more weight to brand in their purchase behaviour because of after sales service and limited purchasing capability.

The third factor is the product features which are the attributes that the product has to give to the consumer an optimal level of satisfaction. According to (Osman, 2012), software has 33% influence on the demand for
smartphones while hardware has only 17.5%. This shows that software has a greater influence than hardware in making smartphone purchase decision.

The fourth factor is dependency which is a high degree propensity for a continuous usage (Ding et al., 2011). They also show that a positive relationship exists between university students’ dependency and their future purchase behaviour, and high dependency on smartphone tends to influence their future purchase behaviour. Suki and Suki (2013) in their study examine the influence of social needs, social influences and convenience of smartphone on students’ dependency on smartphones. Their results via the analysis of structural equation modelling (SEM) show that the relationship between social needs, social influences and convenience of smartphone with dependency on smartphone were supported. The first was found to be the strongest effect. A strong relationship also existed between students’ dependency on smartphone and their purchase behaviour.

Lastly, convenience and social influence also influence the consumers’ preference for smartphones. Purchase decisions are often influenced by social factors such as family, friends and social status among others (Kotler & Armstrong, 2010; Farzana, 2012; Osman, 2012). Convenience refers to a situation where works are simplified, easy and can be done with less effort, without discomfort or difficulty (Lay-Yee et al., 2013). Convenience in smartphone may imply the ability to use the smartphone at anytime and anywhere without having to put the smartphone in a fixed workstation (Ding et al., 2011). A study by Liew (2012) also emphasized convenience as one of the determinants of the demand for Smartphone.

By the aforementioned, it is obvious that the literature reviewed agreed that smartphone demands are determined by several factors as identified. However, considering other variables of importance such as students’ allowance and perception, the literature have not been able to adequately argue which of these variables has the greatest impact on consumer behaviour. To fill this gap in the literature, this study will investigate students’ allowance and perception along side with price and smartphone design and features as determinants of smartphone demand.

2. METHODOLOGY

The theory of demand relates consumer demand for goods and services with their prices. The theory of demand suggests that there is a negative relationship between quantity demanded and price. That is, when price increases, quantity demanded falls. However, when the price decreases, quantity demanded rises – this is popularly known as the law of demand. Moreover, from the literature, there are other factors that determine the quantity of a commodity demanded. These factors such as price of related commodity, income of consumers, taste & preferences of the consumers, expectations about the future prices, and so on are referred to as the determinants of demand. In line with the above and consistent with empirical literature reviewed, this study identified that there are other factors other than price that determines demand for smartphones. Thus, the demand function for this study is presented below as follows.

$$Q_d = f(P_s, SA, SP, DF)$$

where,

- $Q_d$ = Quantity demanded for smartphone,
- $P_s$ = Price of smartphone,
- $SA$ = Students’ allowance,
- $SP$ = Students’ Perception,
- $DF$ = Smartphone design and features.

The apriori expectations of the variables are indicated on top of the variables in the demand function.

This study employs survey research design of expost-facto type. Primary data is employed to investigate the objective of the study. The primary data were generated by means of a self-administered questionnaire. Given the population of the study being the undergraduate students in the University of Ibadan, the students’ estimate based on the 2008/2009 academic session stood around 3,608 (Issa et al., 2011). Out of this, a sample of 200 (5.54% of population) of these students were selected at random. The sample size is verified by making reference to Krejie and Morgan (1970) who argued that the standard minimum sample size suggested for a population of 7,000 is 364 or 5.2% of the population.

Participants were asked to rate how vital 35 potential influencing factors (items) are to their decision to purchase smartphone. The inclusion of the items in the study is based on past literature. The questionnaire is divided into sections A and B. Section A comprises multiple choice question and section B require responses measured on a five-point Likert-scale with values ranging from (1) “strongly disagree” to (5) “strongly agree”.

3. RESULTS

The responses obtained from the questionnaire were analyzed using SPSS. Of the 200 questionnaires, Table 1 below shows the frequency distributions of some of the demographic data generated from the questionnaires. It is revealed from the table that 17%, 35%, 32% and 16% falls between the age of 15-19, 20-24, 25-29 and above 30, respectively. Sex distribution shows that majority of the respondents are male (that is 79% for male and 21% for female). Marital status shows that 89% of the respondents are single and 11% are married as expected among undergraduate students. Among the students that responded, 93% study on full-time basis, while 7% study on a part-time basis. Programme of study of the respondents shows that science students are the most...
represented with 32% of the total sample size. Education students are the least represented by 7% of the total sample size. In between them are art, engineering and medicine with 22%, 15% and 12%, respectively.

Table 1
Frequency Distribution of Some Demographic Data

<table>
<thead>
<tr>
<th>Variable</th>
<th>Categories</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>15-19</td>
<td>34</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>20-24</td>
<td>70</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>25-29</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Above 30</td>
<td>32</td>
<td>16</td>
</tr>
<tr>
<td>Sex</td>
<td>Male</td>
<td>158</td>
<td>79</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Marital status</td>
<td>Single</td>
<td>178</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>Married</td>
<td>22</td>
<td>11</td>
</tr>
<tr>
<td>Mode of study</td>
<td>Full-time</td>
<td>186</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>Part-time</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Programme of study</td>
<td>Art</td>
<td>44</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Engineering</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Medicine</td>
<td>24</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Science</td>
<td>64</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Social Science</td>
<td>24</td>
<td>12</td>
</tr>
</tbody>
</table>

Note. Source: Field Survey (2014).

4. INVESTIGATION OF RESEARCH QUESTIONS

To answer the research questions in this study, correlation analysis is employed. Given the four research questions, Table 2 below shows the pairwise correlation between the various determinants and smartphone demand.

Table 2
Correlation of the Relationship Between Smartphone Demand and Price, Income, Perception, and Other Factors

<table>
<thead>
<tr>
<th>Variables</th>
<th>Correlation, r</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price of smartphones</td>
<td>0.156</td>
<td>0.027**</td>
</tr>
<tr>
<td>Income of students</td>
<td>0.104</td>
<td>0.143</td>
</tr>
<tr>
<td>Students’ perception</td>
<td>-0.165</td>
<td>0.019**</td>
</tr>
<tr>
<td>Smartphones design and features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Operating system</td>
<td>0.379</td>
<td>0.000***</td>
</tr>
<tr>
<td>- E-mail client</td>
<td>0.216</td>
<td>0.002***</td>
</tr>
<tr>
<td>- Social media connectivity</td>
<td>0.139</td>
<td>0.050**</td>
</tr>
<tr>
<td>- Back-ups, addresses etc</td>
<td>0.123</td>
<td>0.082*</td>
</tr>
<tr>
<td>- Keyboard e.g. touchscreen</td>
<td>0.162</td>
<td>0.022**</td>
</tr>
<tr>
<td>- Size/weight</td>
<td>0.215</td>
<td>0.002***</td>
</tr>
</tbody>
</table>

Note. *** significant at 1%; ** significant at 5%; and * significant at 10%. Source: Field Survey (2014).

The correlation values in Table 2 show some striking results. Given the correlation value between smartphone demand and price of smartphone, theory suggests that there exists a negative relationship between price and demand. However, the result shows a significant positive relationship. That is, as price increases the demand for smartphones also increases and vice-versa. This result is inconsistent with the theory but presents reality as students attach social status to the kind of smartphones they use. This shows that reduction in the price of smartphones among university students does not guarantee an improved willingness of the students to purchase smartphones.

Students’ allowances show positive correlation to smartphone demand. This is in accordance with the theory which says income (allowance in the case of this study) is directly related to demand. However, this relationship is insignificant. This result shows that students’ allowance is not enough to determinant smartphone demand. This is because almost all the students do not depend on their allowances to buy the smartphone of their choice. Some get the phones as a gift from brothers and uncles, where parents are responsible for the purchase of smartphones for most of the students.

Students’ perception shows a significant negative relationship as expected. That is, the more students think that buying smartphone is a waste of money, the less they are willing to purchase.

Considering smartphone design and features, six features are investigated in this study as shown in Table 2 above. All the six features (operating system; e-mail client; social media connectivity; back-ups, addresses and so on; keyboard; and size/weight) have positive correlations with smartphone demand. However, when reference is made to their significance, back-ups, addresses and so on is insignificant in determining smartphone demand. From this result, consistent with previous studies such as Liu (2002), Karjaluoto et al. (2005), and Mack and Sharples (2009) among others, it is obvious that the most important factor when considering smartphone purchase by students is smartphone designs and features. Two things can be emphasized in this result. One, students of the University of Ibadan are not fund of using their smartphones as back-ups diaries and so on. Two, contrary to the preference of students to use small phones in the past few years, they now prefer to use big phones with big screen. This is revealed in the kind of phones all the brands produce recently. Before the present time, any student that uses big phones would be ridiculed by his colleagues. Because phone use has gone beyond phone calls, big phones with big screen make the phone operations more interesting.

CONCLUSION

This study investigates the determinants for demand for smartphones among students in the University of Ibadan, Nigeria. After necessary examination of some variables of interest, the study argued that price, students’ perception, and smartphone design and features such as operating system, e-mail client, social media connectivity, keyboard, and size/weight determine demand for smartphone. While, income and smartphone design and feature such as back-
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ups, addresses and so on do not determine demand for smartphone. From this result it is obvious that the most important factor when considering smartphone purchase by students is smartphone designs and features. Despite some insights provided by this study, certain limitations are encountered. Even though the sample size is acceptable based on the literature, it would have been better if it was bigger than 200. This would have made the respondents less homogenous. For instance, there are more of the male than female respondents in this study. Also, the scope of the study is only limited to the university of Ibadan students, further studies can investigate more universities in a single study in Nigeria.

REFERENCES


