DEMOGRAPHIC STUDY ON SMARTPHONE PREFERENCE AMONG STUDENTS IN NIGERIAN UNIVERSITIES

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ABSTRACT

This study investigated smartphone preference among undergraduate and postgraduate students in Nigerian universities. Specifically, the study examined the extent to which students' demographic attributes such as gender, age, usage experience and educational level influence their preference for smartphones. The study also identified and ranked smartphone brands based on selected factors like brand name, brand attachment, perceived usefulness, social influence, price, aesthetic value and product design and features. A cross-sectional survey research design was used for the study. The study population comprised all full-time university students in Nigeria both at undergraduate and postgraduate levels. Questionnaire was designed and electronically administered using Google Form to the target respondents. After three weeks (10th June to 1st July 2020), five hundred and forty-three (543) responses were collated. However, seventy-eight (78) were found to be invalid. As a result, four hundred and sixty-five (465) responses that formed the sample size were used for the study. The data collected were statistically analyzed using frequency table, percentages, mean, standard deviation and t-test with the aid of Statistical Packages for Social Sciences (SPSS) software. The study found that Samsung is the most preferred smartphone among students. It was also revealed that the first three most important factors that influence students' preference for smartphones are brand name, perceived usefulness, and design/features. The study revealed that demographic attributes do not significantly influence smartphone preference among university students. The study, therefore, recommends that demographic attributes such as gender, age, usage experience and programme should not be significantly considered by manufacturers and marketers of smartphones in product differentiation.

Keywords: *Brand Name, Demographics, Preference, Smartphone, Students.*

1.   Introduction

Technological innovations and applications have grown exponentially and formed an essential part of our daily lives. One of these technological innovations is the manufacturing of smartphones. Smartphones as described by Igyuve *et al.* (2018) is "a technological innovation of the new media that has defined human progress by creating a new paradigm of modernity and enabling adopters and users to improve on life affairs in terms of connectivity and social interaction with variety of application and usage freedom" (p.1). Smartphone devices run on operating systems such as Android and iOS that are constantly connected to the Internet.

Smartphone is no longer seen as a mere mobile phone due to its ability to render real-time information and provide a variety of functions such as social networking and game playing

(Alavi & Buttlar, 2019). Most students in tertiary institutions nowadays own a smartphone (Nwachukwu & Onyenankeya, 2017). This is because smartphone is progressively providing platforms for students and other researchers globally to carry out academic activities in a more effective manner. Dukic *et al.* (2015) in a study on the usefulness of smartphones among Hong Kong and Japan Library and Information Science students found that smartphones are used to communicate, socialize, entertain, share and receive information to meet their academic needs. Other uses of smartphones by students as found by Dukic *et al.* (2015) include accessing course materials, searching for catalogue in the library, discussing course assignments with colleagues as well as taking notes. A study by Lau *et al.* (2017) shows that students at both undergraduate and postgraduate levels in Japanese universities utilize smartphones for social networking than academic activities. In Nigeria, Olukotun *et al.* (2013), and Nwachukwu & Onyenankeya (2017) had shown that smartphones are used among students to constantly keep in touch with co-students, friends, lecturers and relatives.

Most of the studies carried out in Nigeria on smartphones focused on uses of smartphone devices (Nwachukwu & Onyenankeya, 2017), smartphone adoption (Igyuve *et al.*, 2018), users satisfaction with smartphone (Adekunle & Okhawere, 2018), smartphone repurchase intention (Adekunle & Ejechi, 2018), among others. Despite the enormous importance of smartphone to students especially in tertiary institutions, there is a paucity of empirical studies in the Nigerian context on the preference for smartphones among students and how such devices could be optimally utilized for academic purposes. Most related studies on smartphone preference are conducted outside Nigeria (Haverila, 2012; Hong *et al.,* 2006; Guleria & Parmar, 2015; Kim *et al.*, 2020) and failed to comprehensively link demographic attributes of users to their preference. Against this backdrop, this study investigated demographic attributes of university students that influence their preference for smartphones. Specifically, this study examined the extent to which students' demographic attributes such as gender, age, usage experience and educational level influence their preference for smartphones. The study also identified and ranked smartphone brands based on selected factors like brand name, brand attachment, perceived usefulness, social influence, price, aesthetic value and product design and features.

2.   Literature Review

2.1   Overview of Smartphone Brands

Smartphones are mobile phones that perform many of the functions of a computer, typically having a touchscreen interface, Internet access, and an operating system capable of running download application. According to BinDhim *et al.* (2014), "a smartphone is considered a mobile phone handset with advanced hardware and software capabilities that enable it to perform complex functions similar to those of laptop computers" (p.3). For a mobile phone to be qualified as a smartphone, Kim (2011) identified the following conditions that must be satisfied: (a) it must be a new appliance produced for personal use instead of commercial or business use; (b) the device must be Internet-based in an unrestricted manner to aid the users in generating and exchanging data on the go; (c) the device must have the ability to install a range of applications from an external source, and (d) it must be sizeable with a high-resolution screen and camera facilities to take and view high-quality audio and videos.

Igyuve *et al.* (2018) identified the unique attributes of smartphones to include wireless access and connectivity, hardware sensors, capacity to install applications, high storage and download capacities and large display screen and resolution. In a similar vein, Kim *et al.* (2013) opined that smartphones must have the following features: a long-lasting battery, warp-speed

processing, crystal clear display, a great camera, multiple windows, high storage space, infrared remote control and fingerprint sensor, among others.

The adoption of smartphones in Nigeria is based on the inception of mobile telecommunication in 2011. Mobile telecommunication facilitated the usage of mobile phones and Internet penetration. Odia & Adekunle (2020) and Liadi (2016) assert that technological innovation, improved usability, increased accessibility, declining product price, Internet browsing and connectivity are the factors that facilitate the adoption of smartphones in Nigeria. Similarly, Igyuve *et al.* (2018) identified educational needs, social and communication needs, social influence, brand and product features, cost efficiency and convenience as factors that have contributed to smartphone adoption among Nigerians. In this study, ten brands of smartphones were selected for empirical investigation of their preference among students. These brands are Samsung, Apple, Tecno, Infinix, Nokia, Gionee, Xiaomi, iTel, Huawei and Oppo.

2.2 Brand Preference for Smartphones

Brand preference is a reflection of consumers' desire to use a particular product or service of a company even when there are other available alternatives (Adekunle & Odia, 2016). According to Hult *et al.* (2012), "brand preference is a measure of brand loyalty where consumers choose to buy one available brand over any others" (p.368). Preference for brands takes place when a user chooses brands that have the dominant anticipated value to satisfy his or her needs from other available brands. Based on a review of the literature, several factors can influence smartphone preference among users (Isibor *et al.,* 2018; Norazah, 2013). The factors of interest in this study include brand name, brand attachment, perceived usefulness, social influence, price, aesthetic value and product design and features. These factors are briefly explained as follows:

2.2.1 Brand name

Brand is an exclusive name that indicates the product to the market. Trademark is a legal term used for a brand. As noted by Cornelis (2010) and Norazah (2013), companies realized that their brand names are immensurable assets for differentiating their products and services in the marketplace. Smartphone users especially students admire a well-known brand of smartphone that would make learning more comfortable, facilitate quick access, provide access to educational and other learning resources. Aside from these benefits, smartphones can help to display information quickly, clean up the graphical interface and serve as a unique social symbol to the users. In Nigeria, popular brands of smartphones that can serve these purposes include Samsung, Apple, Tecno, iTel, Nokia, Gionee, Oppo, Huawei, Xiaomi, Infinix. As found by Khasawneh & Hasouneh (2010), the brand name of a product influences its evaluation by consumers and thereafter an impact on the purchasing behaviour of the consumers. Norazah (2013) in a study on students' demand for smartphones also found that brand name plays a significant role as most users would prefer brands that are globally recognized.

2.2.2 Brand Attachment

The concept of brand attachment is founded on Attachment Theory proposed by Bowlby (1980). The theory was originally proposed to explain the relationship between infants and their parents as well as establishing long term relationships among human beings. The theory was later used by scholars to explain emotional attachments between individuals and objects such as brands (Pedeliento *et al.*, 2016, Hew *et al.,* 2017). Brand attachment according to Hew *et al.*

(2017), "is the bond that connects a consumer with a specific brand and involves feelings toward the brands" (p.41). Thorsteinsson & Page (2014) found that existing smartphone users would prefer to buy a new phone from an existing brand rather than from a newly introduced brand. Wu *et al.* (2015) also assert that users who are attached to a brand are more willing to buy from existing or tested brands.

2.2.3 Perceived Usefulness

According to Chiu *et al.* (2009), "perceived usefulness is the extent to which a consumer believes that a product will enhance his or her transaction performance" (p. 763). Lau *et al.* (2017) and Adekunle & Ejechi (2018) found that smartphones are useful to users by helping them to communicate, socialize, entertain and manage personal activities effectively. As observed by Ifeanyi & Chukwuere (2018), academic activities performed with smartphones include downloading study materials, recording and watching live lectures, accessing lecture slides and conducting research among others.

2.2.4 Social Influence

Rashotte (2007) described social influence as those situations that make individuals to intentionally or unintentionally change their feelings, attitudes and behaviour. Friends and family members play a critical role in changing the social influence of consumers (Norazah, 2013). Smartphone users can greatly be influenced by friends and family members who are already using the brand of smartphone they intend to buy or are already used to help them fit into their social group. Most users of smartphones depend heavily on the product to connect with other people and their environment as well.

2.2.5 Price

The price of a product as explained by Swani & Yoo (2010), "is the amount of money expected, required or given in payment for a product". Products can be high-priced or low-priced. Norazah (2013) described high-priced products or brands as market brands that consider an image as the core attribute for its purchase while low-priced brands are purchased based on the product's function with the consumer depending on its perceived value. Users of smartphones use different avenues to search and compare prices of smartphones before making purchases. For instance, Nigerian buyers can compare prices of smartphones using different online shopping outlets such as Jumia, Konga, Jiji and so on. Friends and family members that are conversant with the brands can also be consulted.

2.2.6 Aesthetic Value

Aesthetics connotes appearance, attractiveness or beauty. Schenkman & Jonssson (2000) and Tractiasky (2004) have extensively explored how aesthetics play a significant role in human appreciation and attributes of technological innovations. According to Toufani (2015), "aesthetics is understood via the sensory perceptions of look and touch creating reactions in the individual rather than telling with words". However, the aesthetic value of products such as smartphones should be evaluated on the device to facilitate information processing and its functionality.

2.2.7 Design and Features

Kotler & Armstrong (2007) refer to product design/features as the characteristics of a product that help to meet the needs and want of consumers and increase their satisfaction level by owning and using the product. Smartphones such as Samsung, Apple, Tecno, iTel, Nokia, Gionee, Oppo, Huawei, Xiaomi, Infinix are designed in a portable and user-friendly manner. Most of the brands have larger and higher resolution screens, internal storage capacities, long-lasting batteries, infrared remote control and so on. Interestingly, smartphones offer users a wide array of features such as audio and video playback, sharp camera, GPS, games, picture and video editing, e-mail and instant messaging, installation of the application and so on. Smartphones run on an operating system such as Android and iOS. Globally, Android is a market leader in the operating system. Studies by Bloch (1995) and Osman *et al.* (2012) found that product design and features play a significant role in customer preference for products. It is therefore expected that the designs and features of a smartphone will greatly determine the preference for such smartphones among university students.

2.3   Demographic and Background Characteristics

2.3.1 Users' Gender and Smartphone Preference

The term gender is used about a set of characteristics that distinguish females from males. Although females and males differ in their biological or physical makeup, these are not the only attributes that differentiate them. They can be differentiated based on attitudes, traits and actions which can impact the behaviour of consumers (Hoyer & Stokburger-Sauer, 2012). Both genders have different ways in which they observe, retrieve, process and evaluate the information for making judgements (Kwok *et al.*, 2016; Karatepe, 2011). For example, Karatepe (2011) and Hoyer & Stokburger-Sauer (2012) found that women paid attention to information that is personally relevant and also to information that was relevant to other individuals. Women are more likely to get engaged in an in-depth and very detailed examination of a message and based on the attributes of products make an extended decision. Kwok *et al.* (2016) stated that women tended to emphasize more on quality because they evaluate and consider in great detail the various aspects of a product, while customers who were male tend to evaluate in a manner that considered the overall aspects. Female customers are likely to have higher expectation of a product than males, which then influences the satisfaction level they get (Juwaheer, 2011).

Shade (2007) found that boys made use of mobile phones due to the technologies available to them, meanwhile girls made use of mobile phones for SMS and voice calls as a way in which to stay connected to their friends. The study also revealed that females made use of cell phones for more interpersonal communication than males. Haverila (2012) showed that there was no significant difference between SMS and phone call usage of females and males. Women and men were also found to make use of the Internet with about the same level of frequency. The reason for smartphone preference is however different for both gender as females tended to make use of the phones more for communication purposes while males used it in the search for information and playing games (Rashid *et al.*, 2020).

2.3.2 Users' Age and Smartphones Preference

Research work conducted by Rashid *et al.* (2020) revealed that concerning digital instruments, the practice of the elderly individuals differed from that of young individuals, causing usage patterns to be different. Another study conducted by Auter (2006) shows that old individuals

have a different manner in which they perceived mobile phones in comparison to young people. According to Auter (2006), individuals who are elderly have fewer reasons for the use of mobile phones and the usage frequency is also limited, while young individuals have a large amount of reasons for the use of mobile phones and their usage frequency is much higher. A major portion of elderly individuals perceives mobile phones to be safety providing devices.

Oksman & Turtianen (2004) found that young people however view mobile phones as being a source of freedom. Young individuals are more dependent on mobile phones than any other age group. A reason for this is the delivery of media content by mobile phones that creates a close bond between the mobile phone and young users. Interestingly also, the level to which new technology is adapted to is inversely proportional to age. This suggests that the lower the age the quicker the adaptation of the age group to technology. The smartphone industry considers young users to be the "sweet spot" (Lee *et al.*, 2019). This suggests that this age group is responsible for driving and directing stakeholders within the ecosystem of mobile phones for the development of new technologies and applications. As said, young individuals grow, how they view mobile phones changes and they go through certain specific patterns of usage which shows that a similar pattern to human development theory.

2.3.3 Usage Experience and Smartphone Preference

This refers to how long and how much the user of a smartphone makes use of the device (Kim *et al.,* 2016; Rodgers *et al.,* 2005). It concerns the depth of the relationship that exists between a company and a customer (Aurier & N'Goala, 2010). When the usage experience of a customer is high, users' commitment towards a product or company is usually higher. This enhances the depth of the relationship. The preference a user has for a product is very likely to be affected by usage experience. Norazah (2013) conducted a study on student demand for smartphones, the study found that the experience of smartphone users indicated the type of operating system preferred is Android (53.1per cent), which was followed closely by iPhoneRIM (30.6 percent) while OS Windows is less used (2 percent). The study also showed that smartphones were used for social network purposes by about half of the respondents (49.4 percent), this was followed by text messaging (SMS) (24.7 percent), playing of games (15.3 percent) and for playing music among other activities. Norazah (2013) further found that each day about one-quarter of users usually spent less than two hours on smartphones, with 30 percent spending more than six hours.

2.3.4 Users' Educational Level and Smartphone Preference

The level to which an individual adapts to new technology depends on their level of education. People who adopt technology earlier are usually more educated and people who adopt technology late tend to be less educated. Smartphone users who possess lesser levels of education have been reported to have pointed out that inadequate levels of knowledge have been a barrier to their use of technology such as the Internet. Such individuals have an increased level of anxiety and fewer complex cognitive formations (Rogers *et al.,* 2019; Rashid *et al.,* 2020). According to Mohammadyari and Singh (2015), as the level of education increased, so is the likelihood of the individual using technologies such as smartphones, Internet and computers. Research has shown that an increased level of education is accompanied by an increase in the perceived ease of technology usage (Rashid *et al.,* 2020).

3.   Methodology

A cross-sectional survey research design was used for this study. The study population comprised all full-time university students in Nigeria both at undergraduate and postgraduate levels. Due to the lockdown orchestrated by Coronavirus pandemic, the questionnaire designed for the study was administered and retrieved electronically using Google Form (https://forms.gle/bprSMkz1Cyj1yswAA) to the target respondents. In getting the questionnaire across to the students, the support of course advisers and class representatives in different departments were sought to share the link to the respondents and encourage them to voluntarily but sincerely fill the questionnaire. After three weeks (10th June to 1st July 2020), five hundred and forty-three (543) responses were collated. However, seventy-eight (78) were found to be invalid. Responses treated as invalid were participants that ticked a brand of smartphone they have not used before as their most preferred brand. Consequently, only responses from the respondents that have their most preferred brands as one of the brands of smartphones they have used before or currently in used were considered valid for data analyses. As a result, four hundred and sixty-five (465) responses that formed the sample size were used for the study.

Preference for ten brands of smartphones namely: Apple, Gionee, Huawei, Infinix, iTel, Nokia, Oppo, Samsung, Tecno, Xiaomi were selected for empirical investigation among Nigerian university students. The questionnaire was divided into two sections. Section A contains background or demographic attributes of the respondents such as gender, age, usage experience and educational level. The items on smartphone preference formed Section B on the questionnaire which was adopted from previous studies conducted by Nozarah (2013), and Adekunle & Ejechi (2018). The data collected were statistically analyzed using frequency table, percentages, mean, standard deviation and t-test with the aid of Statistical Packages for Social Sciences (SPSS) software.

4.   Results and Discussions

This section presents the results that emanated from the data analysis in line with the research objectives as well as the discussion of findings.

4.1   Demographic Background

The respondents were asked to provide background information such as gender, age, usage experience and programme. The results are presented in Table 1:

Table 1. Demographics Information of Respondents

Variable	Category	Frequency	Percent	Cumulative Percent
Gender	Male	262	56.3	56.3
	Female	203	43.7	100
	Total	465	100	
Age	18years & below	29	6.2	6.2
	19-23years	219	47.1	53.3
	24-28years	102	21.9	75.3
	29-33years	46	9.9	85.2
	34years & above	69	14.8	100
	Total	465	100	
Usage Experience	Below 6months	5	1.1	1.1
	6-11months	16	3.4	4.5

Variable	Category	Frequency	Percent	Cumulative Percent
	1-3years	45	9.7	14.2
	4-6years	102	21.9	36.1
	Above 6years	297	63.9	100
	Total	465	100	
Programme	Postgraduate	139	29.9	29.9
	Undergraduate	326	70.1	100
	Total	465	100	

The gender of the respondents shows that majority of them are male. This category accounts for 56.3% while 43.7% were female. The age distribution showed that the majority of the respondents (219, 47.1%) were between 19 - 23years old. This category is followed by respondents (102, 21.9%) between 24 – 28years old. Respondents that are 29years old and above accounts for 24.7% while respondents that are 18years and below accounts for 6.2%.

The usage experience of the respondents shows that the majority of them (297, 63.9%) have used smartphones for six years and above while others that have used smartphones for less than six years jointly accounted for 36.3%. This shows that the respondents that filled the questionnaire are knowledgeable in the use of smartphone based on how long they have been using the devices. Table 1 also shows that 139 (29.9%) of the respondents were postgraduate students while the majority of them (326, 70.1%) were undergraduate students.

4.2 Smartphone Usage and Preference

This section presents the results on respondents' evaluation of the usage and preference for different brands of smartphone. The results are shown in Table 2:

Table 2. Respondents' Assessment of Smartphone Usage and Preference

Brand	Smartphone Usage			Smartphone Preference		
	Freq	Percent	Rank	Freq	Percent	Rank
Samsung	258	55.5	3rd	132	28.4	1st
Apple	150	32.3	5th	104	22.4	2nd
Tecno	289	62.2	1st	87	18.7	3rd
Infinix	243	52.3	4th	79	17	4th
Nokia	264	56.8	2nd	23	4.9	5th
Gionee	93	20.0	7th	14	3	6th
Xiaomi	18	3.9	9th	10	2.2	7th
iTel	110	23.7	6th	8	1.7	8th
Huawei	51	10.9	8th	7	1.5	9th
Oppo	5	1.1	10th	1	0.2	10th
Total				**465**	**100**	

Note: % is computed over 465 valid responses

Table 2 shows that the usage of the different brands of smartphone for the sampled respondents are shown in the following order: Tecno, Nokia, Samsung, Infinix, Apple, iTel, Gionee, Huawei, Xiaomi and Oppo. Table 2 also shows that the preference for smartphone among university students are in the following order: Samsung (28.4%), Apple (22.4%), Tecno (18.7%), Infinix (17%), Nokia (4.9%), Gionee (3%), Xiaomi (2.2%), iTel (1.7%), Huawei (1.5%) and Oppo (0.2%). This shows that Samsung, Apple, Tecno and Infinix are the most preferable brands of smartphones in the Nigerian market. This research outcome is similar to the finding of Isibor *et al.* (2018) that found that Samsung is the most preferred brand of smartphones among undergraduate students. However, in a study on customer loyalty to mobile

phone brands conducted by Odia & Adekunle (2020), Nokia was found to be the most preferred brand.

4.3 Factors Affecting Smartphone Preference Among Users

This section presents the descriptive statistics (frequency, percent and mean) of the factors influencing smartphone users' preference. The factors investigated include brand name, brand attachment, perceived usefulness, social influence, price, aesthetic value and product design and features. The results are presented in Table 3 and 4:

Table 3. Factors Affecting Smartphone Preference Among Users

S/N	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Rank
1	My preferred smartphone is a well-known and prestigious brand (Brand name)	7 (1.6%)	7 (1.6%)	30 (6.5%)	87 (18.8%)	334 (71.5%)	4.59	1st
2	I accomplish tasks easily and quickly with my preferred smartphone (Perceived usefulness)	10 (2.2%)	4 (0.9%)	27 (5.9%)	128 (27.6%)	296 (63.4%)	4.50	2nd
3	My preferred smartphone is attractive based on its design, weight and durability (Design & features)	9 (2%)	15 (3.3%)	54 (11.7%)	139 (29.6%)	248 (53.4%)	4.30	3rd
4	The price of my preferred smartphone is commensurate to its value (Price)	9 (2%)	7 (1.4%)	67 (14.3%)	173 (37.3%)	209 (45%)	4.22	4th
5	The aesthetics of my preferred smartphone is well pleasing and fascinating (Aesthetic value)	9 (2%)	9 (2%)	77 (16.4%)	192 (41.3%)	178 (38.3%)	4.12	5th
6	I am emotionally attached to my preferred smartphone (Brand attachment)	41 (8.9%)	54 (11.7%)	143 (30.5%)	126 (27.1%)	101 (21.5%)	3.42	6th

S/N	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Rank
7	The choice of my preferred smartphone was influenced by pressure from family and friends (Social influence)	208 (44.5%)	80 (17.3%)	84 (18.1%)	44 (9.5%)	49 (10.6%)	2.24	7th
Overall Mean							3.91	

As shown in Table 3, there are different factors that determine students' preference for smartphones. As assessed by the respondents, these factors are rated in the following order using their mean scores: brand name (4.59), perceived usefulness (4.50), design and features (4.30), price (4.22), aesthetic value (4.12) brand attachment (3.42) and social influence (2.24). The overall mean of 3.91 shows that majority of the respondents agreed that the aforementioned factors determine their preference for smartphones.

Table 4. Brand Rating Based on Preference Factors

Preference	Brand Name	Perceived Usefulness	Brand Attachment	Social Influence	Price	Aesthetic Value	Design & Features
Samsung (n=132)	4.79	4.62	3.39	2.04	4.30	4.25	4.45
Apple (n=104)	4.83	4.74	3.57	2.48	4.37	4.49	4.57
Tecno (n=87)	4.43	4.18	3.44	2.26	4.05	3.85	4.13
Infinix (n=79)	4.43	4.38	3.32	1.91	4.16	3.81	4.16
Huawei (n=7)	4.43	4.71	4.14	2.43	4.43	4.14	4.14
Nokia (n=23)	4.09	4.17	2.91	2.26	3.83	3.70	3.61
Gionee (n=14)	4.21	4.43	3.71	2.93	4.14	4.14	4.00
Xiaomi (n=10)	3.60	4.90	3.40	2.70	4.70	4.40	4.60
iTel (n=8)	5.00	4.63	2.88	3.38	4.13	4.25	4.13
Oppo (n=1)	4.00	4.00	4.00	3.00	4.00	4.00	4.00
Overall Mean	4.59	4.50	3.42	2.24	4.22	4.12	4.30
Standard Deviation	0.800	0.823	1.202	1.386	0.883	0.887	0.931

Table 4 shows that preference for investigated smartphone brands is mainly based on brand name, perceived usefulness, design and features, price and aesthetic value while brand attachment and social influence are the least considered factors. Based on the overall mean of the ten investigated brands of smartphones, the first three most important factors that influence students' preference for smartphones are brand name, perceived usefulness, and design/features with mean scores of 4.59, 4.50 and 4.30 respectively. The mean scores of the other factors based

on their importance are 4.22, 4.12, 3.42 and 2.24 for price, aesthetic value, brand attachment and social influence respectively. The outcomes of previous studies by Isibor *et al.* (2018), Suki & Suki (2013), Kumaravel & Kandasamy (2012), Ho & Wu (2011) support the findings of this study as brand name, price and social influence were found to significantly determine preference for the smartphone among users.

4.4   Smartphone Preference Based on Demographic Characteristics

This section presents the results of respondents' preference for different brands of smartphone based on demographic characteristics such as gender, programme, age and usage experience. The results are shown in Table 5 and 6.

Table 5. Smartphone Preference Based on Gender and Programme

Brand	Gender				Programme			
	Category	N	Mean	t-Stat	Category	N	Mean	t-Stat
Samsung	Male	79	3.94	-1.161	Postgraduate	55	4.01	0.736
	Female	53	4.03	(0.248)	Undergraduate	77	3.95	(0.463)
Apple	Male	47	4.16	0.317	Postgraduate	20	4.11	-0.444
	Female	57	4.14	(0.752)	Undergraduate	84	4.16	(0.658)
Tecno	Male	50	3.71	-0.863	Postgraduate	27	3.74	-0.260
	Female	37	3.83	(0.390)	Undergraduate	60	3.77	(0.795)
Infinix	Male	48	3.74	0.097	Postgraduate	18	3.78	0.362
	Female	31	3.73	(0.923)	Undergraduate	61	3.73	(0.718)
Huawei	Male	3	3.67	-1.252	Postgraduate	2	4.86	3.509
	Female	4	4.36	(0.266)	Undergraduate	5	3.74	(0.017)*
Xiaomi	Male	7	3.94	-1.115	Postgraduate	3	3.95	-0.390
	Female	3	4.29	(0.297)	Undergraduate	7	4.08	(0.707)
Nokia	Male	15	3.35	-1.248	Postgraduate	10	3.53	0.095
	Female	8	3.80	(0.226)	Undergraduate	13	3.49	(0.925)
Gionee	Male	12	4.02	1.442	Postgraduate	4	3.68	-1.104
	Female	2	3.43	(0.175)	Undergraduate	10	4.04	(0.291)
iTel	Male	1	3.14	-2.477	Undergraduate	8	4.05	NA
	Female	7	4.18	(0.048)*	-	-	-	
Oppo	Female	1	3.86	NA	Undergraduate	1	3.86	NA

Table 5 reveals that preference for Samsung, Apple, Tecno, Infinix, Huawei, Xiaomi, Nokia and Gionee is not significantly influenced by respondents' gender. However, preference for iTel (t= -2.477; p=0.048) brand is significantly influenced by gender. The result further shows that Female respondents preferred iTel brand more than their male counterparts. Similarly, the results also showed that preference for Samsung, Apple, Tecno, Infinix, iTel, Xiaomi, Nokia and Gionee is not significantly influenced by respondents' programme (undergraduate or postgraduate). However, the preference for Huawei (t= 3.509; p=0.017) brand is significantly influenced by programme. The result further shows that respondents undergoing postgraduate programme preferred Huawei brand more than the undergraduate students.

Table 6. Smartphone Preference Based on Age and Usage Experience

Brand	Age				Usage Experience			
	Category	N	Mean	t-Stat	Category	N	Mean	t-Stat
Samsung	Younger Users	66	3.95	-0.507 (0.613)	Low Experience Users	52	3.97	-0.051 (0.959)
	Older Users	66	4.00		High Experience Users	80	3.98	
Apple	Younger Users	68	4.19	1.311 (0.193)	Low Experience Users	32	4.17	0.248 (0.805)
	Older Users	36	4.07		High Experience Users	72	4.14	
Tecno	Younger Users	44	3.81	0.643 (0.522)	Low Experience Users	30	3.68	-0.864 (0.390)
	Older Users	43	3.72		High Experience Users	57	3.80	
Infinix	Younger Users	42	3.78	0.734 (0.465)	Low Experience Users	31	3.72	-0.291 (0.772)
	Older Users	37	3.69		High Experience Users	48	3.75	
Huawei	Younger Users	5	4.06	-0.021 (0.9840	Low Experience Users	4	3.82	-0.964 (0.379)
	Older Users	2	4.07		High Experience Users	3	4.38	
Xiaomi	Younger Users	3	4.14	0.432 (0.677)	Low Experience Users	6	4.07	0.229 (0.825)
	Older Users	7	4.00		High Experience Users	4	4.00	
Nokia	Younger Users	10	3.64	0.663 (0.514)	Low Experience Users	7	3.51	0.003 (0.997)
	Older Users	13	3.41		High Experience Users	16	3.51	
Gionee	Younger Users	3	4.29	1.229 (0.243)	Low Experience Users	5	4.09	0.715 (0.488)
	Older Users	11	3.84		High Experience Users	9	3.86	
iTel	Younger Users	5	4.17	0.811 (0.448)	Low Experience Users	2	4.21	0.478 (0.649)

Brand	Age				Usage Experience			
	Category	N	Mean	t-Stat	Category	N	Mean	t-Stat
	Older Users	3	3.86		High Experience Users	6	4.00	
Oppo	Younger Users	1	3.86	NA	High Experience Users	1	3.86	NA

In Table 6, the respondents' age and usage experiences were re-categorized into two broad groups (younger and older users) and (low and high experience users) respectively from the five original groups to apply the t-test statistical tool. For age, respondents that are 23years old and below were grouped as younger users while respondents that are 24years old and above were grouped as older users. In similar vein, respondents that have used smartphones for less than six years were grouped as low experience users while respondents that have used smartphones for six years and above were grouped as high experience users. These kinds of categorization have been used by Lin *et al*., (2014) and Adekunle & Okhawere (2018). Table 6 reveals that preference for Samsung, Apple, Tecno, Infinix, Huawei, Xiaomi, Nokia, Gionee and iTel is not significantly influenced by respondents' age (younger or older users). Similarly, the results also showed that preference for Samsung, Apple, Tecno, Infinix, Huawei, Xiaomi, Nokia, Gionee and iTel is not significantly influenced by respondents' usage experience (low or high experience users). Oksman & Turtianen (2004) stated that young people view mobile phones as being a source of freedom and further explained that young individuals are more dependent on mobile phones than any other age group. A reason for this is the delivery of media content by mobile phones that creates a close bond between the devices and young users. As acknowledged by Lee *et al.* (2019) the level to which new technology is adapted to are inversely proportional to age. This explains why the smartphone industry considers young users to be the "sweet spot".

5.   Conclusion and Recommendations

This study investigated smartphone preference among undergraduate and postgraduate students in Nigerian universities. The study examined the demographic attributes of university students that influence their preference for smartphones. Hence, the study determined the extent to which students' demographic attributes such as gender, age, usage experience and educational level influence their preference for smartphones. The study also identified and ranked smartphone brands based on selected factors like brand name, brand attachment, perceived usefulness, social influence, price, aesthetic value and product design and features. Using data validly collected from 465 respondents, the study found that Samsung is the most preferred smartphone among students. This finding agrees with the assertion by Ruiz *et al.* (2020) that Samsung is among the leading players in the smartphone markets globally. Students' preference for Samsung can perhaps be explained by the leading role the company plays in the electronics industry in Nigeria by continuously improving the capability and functionality of their products. The company has recently designed smartphones running on Tizen OS as an alternative to the Android-based smartphone. Samsung smartphones are also known for quality and fascinating attributes such as faster processors, high quality cameras, strong battery, and clear and clear screen among others.

Samsung is followed by Apple, Tecno, Infinix, Nokia, Gionee, Xiaomi, iTel, Huawei and Oppo. It was also revealed that the first three most important factors that influence students' preference for smartphones are brand name, perceived usefulness, and design/features. Preference for Samsung, Apple, Tecno, Infinix, Xiaomi, Nokia and Gionee is not significantly

influenced by respondents' gender and programme. Finally, the study revealed that respondents' age and usage experience do not significantly influence smartphone preference among university students.

The following recommendations are made to guide the manufacturing and marketing of smartphone for Nigerian students and other users:

i. Smartphone manufacturers should produce products with high-quality software and hardware as well as high resistance for malware attacks.
ii. Samsung as the most preferred brand of smartphone indicates some unique attributes and strategies about the brand that other manufacturers can understudy to offer better products in the Nigerian market.
iii. The non-significant influence of demographic attributes such as gender, age, usage experience and programme on smartphone preference shows that manufacturers and marketers of the investigated brands of smartphones may not necessarily differentiate their products along the different attributes of smartphone users as it may produce little or no result.

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