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Article

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MARKETING | RESEARCH ARTICLE

Factors influencing online purchase intention of smartphones: A hierarchical regression analysis

Rex P. Bringula^{1*}, Shirley D. Moraga¹, Annaliza E. Catacutan^{1,2}, Marilou N. Jamis² and Dionito F. Mangao^{1,3}

Abstract: This study determined which of the factors—company, personal, and technical—could influence online purchase intention of smartphones. Toward this goal, data gathered from 230 students were analyzed using hierarchical regression analysis. Three steps of hierarchical regression analysis disclosed that security and trust were the consistent predictors of online purchase intention of smartphones. Trust was the strongest predictor of online purchase intention of smartphones. It was disclosed that price was initially considered when buying the device. However, subsequent analyses revealed that this variable was no longer considered when personal-related factors were included in the analysis. Quality was not a significant predictor all throughout the analysis. The results of the study offered explanations on the conflicting results of previous studies in terms of price and quality. It was concluded that the study was able to determine the factors that could influence purchase of smartphones in an online environment. Recommendations and implications to theory and practice were also discussed.

Subjects: Consumer Psychology; ICT; Behaviour

Keywords: price; prior online purchase; quality; security; smartphone; trust

1. Introduction

Smartphones are technological innovations that provide new ways to communicate. As a technological wonder, smartphones provide means of sending text messages, capturing photographs,

ABOUT THE AUTHOR

This piece of work is a result of research collaboration of faculty members from the University of the East (UE), National University (NU), and Cavite State University (CvSU)—Naic Campus. This study is part of the research project (headed by Rex P. Bringula, Ph.D. of the University of the East) on e-commerce adoption in the Philippines. Dr. Shirley Moraga is a full-time faculty member of UE, Prof. Annaliza Catacutan and Prof. Marilou N. Jamis are full-time faculty members of NU; and Prof. Dionito Mangao Jr. is a graduate student of the University of the East and a research coordinator of CvSU—Naic Campus.

PUBLIC INTEREST STATEMENT

In absence of human-to-human interaction, online shoppers rely heavily on the content and security features of shopping websites. Possible customers may be reluctant to purchase online commodities, especially when the product is expensive like smartphones. This study attempted to address these concerns by investigating the possible reasons that influence online purchase intention of smartphones. The results of the study inform online shopping website developers the website designs requirements of its possible customers. The results of the study are both beneficial for the online business provider and consumers. The former may achieve its business goals while it strengthens its customer relationship which may lead to a vibrant online business community.

and accessing the Internet. Their portability, powerful computing capabilities, and relatively inexpensive prices make them popular. The demand for smartphones steadily grew as was shown in the fact that 5 billion people had smartphones in 2017 and it is expected that this figure will increase by 5.9 billion in 2025 (GSMA, 2018). In the United States alone, smartphones become household devices as 95% of its population had smartphones (Pew Research Center, 2018).

According to the Ericsson Mobility Report (Ericsson, 2014), Filipinos use smartphones primarily for chatting, browsing the Internet, visiting social network sites, viewing videoclips, and sending text messages and emails. The subscriptions to smartphones continue to rise because of these online activities whose main subscribers are the youth (10–24 years old) (Ericsson, 2014). The World Bank (2016) reported that there were 111 mobile phone subscriptions per 100 people. Obviously, the need to socialize and the influence of the society drive the youth to use smartphones (Arif et al., 2016; Mohd Suki, 2013). Because of the call to socialize, the convenience brought by smartphones entices the youth to use these devices (Arif et al., 2016). Abu-Shanab and Abu-Baker (2014) showed that the youth in Jordan use smartphones mainly for communicating, setting of alarm or using as watch, and for sending messages.

Igna (2015) showed that the Filipino youth use smartphones for visiting social media apps, watching online videos, playing games, searching for locations or directions, and managing online bank transactions. In a similar study, Bristol, Caro, Mangaliman, and Bernarte (2016) disclosed that visiting of social networking sites, sharing of videos or photos, sending e-mail or instant messages, listening to music, reading e-books, blogging, watching online news, and buying products online are the primary reasons for using smartphones. Igna (2015) of the National Telehealth Center of the Philippines disclosed that there were 115 million Filipinos with smartphones. This was about 113% of the total population of the Philippines (Igna, 2015). These figures indicate that one Filipino may own more than one smartphone.

It is clear that there is a positive response toward the adoption of smartphones (Coelho, Meneses, & Moreira, 2013). This also leads to the creation of mobile application economy (MacMillan, Burrows, & Ante, 2009) which is now the subject of different studies (Harris, Brookeshire & Chin, 2016; Kim, Kankanhalli, & Lee, 2016). In the business point of view, the preference of people to use smartphones created opportunities for a vibrant economy. Researchers extensively investigated the factors that influence purchase intentions of smartphones (e.g., Abu-Shanab & Abu-Baker, 2014; Coelho et al., 2013; Öztürk & Karakaş, 2016; Rahim, Safin, Kheng, Abas, & Ali, 2016; Zahid & Dastane, 2016). However, these investigations were conducted in the context of in-store purchase which has a different environment from online shopping stores (Khatibi, Haque, & Karim, 2006; Laroche, Yang, McDougall, & Bergeron, 2005).

In the absence of face-to-face transactions in shopping websites, possible buyers only rely on the information on the website supplied by the online shopping providers. They may opt to switch to traditional channel when they are not satisfied about the information they saw on the website (Järveläinen, 2007). Moreover, products being sold online have different characteristics. Hence, the factors that might influence smartphone-purchase intention might be different from that of other products (Brown, Pope & Voges, 2003; Walia, Strite, & Huddleston, 2015). In other words, it is still unclear what factors can influence the purchase intentions of smartphone buyers when the process of possible purchase is conducted in an online shopping environment.

This study attempted to address this research gap. The study determined which factors were considered by possible customers when they intend to purchase smartphones in a shopping website. Specifically, the study sought to answer the following questions: (1) What is the profile of the respondents in terms of computer access at home, Internet access at home, gross family monthly income, and previous online purchase experience? (2) What is the perception of the respondents toward buying smartphones online in terms of company, personal, and technical factors? (3) How do respondents rate their levels of intentions to purchase smartphones online?

and (4) Do company, personal, and technical factors of online shopping considerations, singly or in combination, influence intention to purchase smartphones online?

The paper consists of the following subsequent sections. The Literature Review section discussed the studies that reported the factors considered in buying smartphones in the context of in-store purchase. It is followed by the discussion of factors that influence online purchase intentions. Next, an analysis of the literature, the formulation of research framework, and hypotheses are reported. The methodology section then presented the approaches undertaken in the study. Results are presented and discussed. Implications to theory and practice, and recommendations are offered. Conclusions are shown on the last part of the paper.

2. Literature review

2.1. Purchase of mobile phones

It is apparent that the need to have smartphones created a phenomenon of purchase behavior of these devices (Mohd Suki, 2013). Generally, smartphones are bought because of its connectivity, portability, computing capabilities, and location detection abilities (Coelho et al., 2013). Researchers have also shown that intention to purchase smartphones is predicted by price awareness of the respondents, perceived quality, technology perception, social and functional risk, and brand awareness (Coelho et al., 2013). Abu-Shanab and Abu-Baker (2014) categorized the factors that influenced smartphones purchased. Abu-Shanab & Abu-Baker disclosed that the factors considered—in decreasing order—in buying smartphones are phone features, followed by performance, and lastly, price. The researchers further reported that respondents are particular with the quality of the phone camera, the ease of using the phones, and its overall practical value.

In another study, Öztürk & Karakaş (2016) revealed that the properties of the mobile phones (quality of mobile phone, design aesthetic, ease of use, extra features), services (customer service, service network coverage, warranty), brand (brand loyalty, strong and reliable image), and price (inexpensive price, alternative mode of payment) are considered in buying smartphones. Zahid and Dastane (2016) reported the same findings in their study of smartphone purchase intention of South East Asian young adults. They also disclosed that brand awareness, perceived price, perceived quality, and social had positive and significant influence on intention to purchase smartphones. It is worth noting that Rahim et al. (2016) had consistent findings to those of Öztürk & Karakaş, and Zahid & Dastane. It was disclosed that product features, brand name, and social influence had significant influence with mobile phone purchase intention (Rahim et al., 2016).

2.2. Company-related factors

Online purchase intention—subsequently referred to as purchase intention—is the strength of tendency that customers will buy a product online after inspecting the product (Laroche, Kim, & Zhou, 1996; Laroche & Sadokierski, 1994; Salisbury, Pearson, Pearson, & Miller, 2001). Likewise, online shopping providers supply information about the price and quality of their products as well as their secured and trusted services. Different studies attempted to explain the factors that could influence purchase intention. One of these is Järveläinen (2007) who commented that online shopping providers convince consumers that online shopping systems are secured and trustworthy. This is reasonable since consumers have to deal with uncertainty or threat such as scam, identity theft, hacking, and poor or unsafe products (Bringula, 2016a; Li, Kim, & Park, 2007; Zhang & Prybutok, 2003).

Kim (2010) provided evidence that privacy, security, trust, convenience, enjoyment of online shopping, company reputation, and tactility are the factors that affect intention to purchase online. Kim collectively called these variables as consumer factors. However, marketing factors (product, promotion, price, delivery methods, return policy, customer service) and technology factors (personal computer and Internet access, download time, representativeness of pictures and colors of website) do not influence purchase intention. The study did not indicate the products under investigated.

Ling, Chai, and Piew (2010) proved that purchase intention of undergraduate students in Malaysia was influenced by impulse purchase intention, quality orientation, brand orientation (knowledge about the brand), and online trust. Thamizhvanan, Xavier, and Goyal (2013) confirmed that impulse purchase intention and online trust do affect purchase intention. However, Thamizhvanan and Xavier (2013) reported that quality does not influence purchase intention. Akar and Nasir (2015) concluded that there are mixed findings about whether quality could influence purchase intention. Ling et al. (2010) and Thamizhvanan and Xavier (2013) did not report the products or services they considered in their studies.

Meanwhile, another study by Delafrooz, Paim, and Khatibi (2011), also conducted in Malaysia, had the same nature of respondents (i.e., students). They found out that convenience, price, customer service, trust, security, and wider selection of products are significant predictors of purchase intention. Abadi, Hafshejani, and Zadeh (2011) further reported that students' perceived risks, trust, perceived enjoyment, firm reputation, social influence, and perceived usefulness of shopping website had an impact on online purchase intentions. The authors further disclosed that perceived risk is a negative factor while trust is the most significant predictor of purchase intention. The items investigated in the study were food/beverages, clothing/accessory/shoes, toys, computer/electronics/software, and book/DVD/CD.

The study of Kim, Xu, and Gupta (2012) determined which of the two factors—price and trust—had the most significant effect on the decision to purchase books and CDs online. The contributions of this paper are very clear. First, it shows that perceived trust is a stronger predictor than perceived price on purchase intentions for both possible and repeat customers. Second, when deciding to purchase online, this paper shows that repeat customers are more particular with the price of the product than the potential customers. This is because possible customers value trust toward online shopping more than the repeat customers. In a recent study, it is confirmed that if consumers suspect that online products are of poor quality and are more expensive than the traditional stores, they would not engage in online shopping (Bringula, 2016a).

The study of Akar and Nasir (2015) showed that, after reviewing 100 published articles on factors that influence online purchase intentions, 17 articles reported that trust had a positive influence on purchase intentions. On the other hand, the researchers revealed that 15 articles are in agreement that perceived risk has negative influence on purchase intention. Two studies (Liao & Cheung, 2001; Mehta & Kumar, 2012) have similar findings that price has a significant impact on purchase intention.

Brown et al. (2003) and Walia et al. (2015) commented that each product in an online environment has different information and interface design needs. Walia et al. (2015) proved their claim by investigating the factors that influence purchase intention of flash drive, GPS, and LCD TV. They revealed that purchases in shopping website could be achieved by incorporating the price, complexity of the product, and personal involvement (interest or motivation) of customers in the interface design of the website.

Last, Jadhav and Khanna (2016) conducted a qualitative study to reveal the factors that influence online buying behavior of 25 college students. Content analysis on the in-depth interview revealed that availability of products, low price, promotions, comparison, convenience, trust, time consciousness, attitude toward online shopping, availability of customer service, perceived ease of use the website, and variety seeking emerged as factors that influence online purchase. The researchers reported that students buy different products such as tickets, electronic goods and accessories, apparels, books, footwear, cellphone chargers, and gift items.

2.3. Personal-related factors

The abilities of a person can serve as significant factors that influence purchase intention. Brown et al. (2003) showed that purchase intention of products and services (e.g., clothing, travel services, automobiles, insurance services, sporting equipment, and entertainment tickets) was

influenced by prior purchase experience and gender. Correspondingly, Järveläinen (2007) showed that prior purchase experience on using traditional and online channels, and perceived usefulness of the system have a significant effect on the intention to purchase cruise ticket. It is worth noting that different studies consistently showed that prior purchase experience influenced purchase intention (Akar & Nasir, 2015; Ling et al., 2010; Thamizhvanan et al., 2013).

The ability of a person to use shopping website has an impact on the intention to shop online (Delafrooz, Paim, & Khatibi, 2011; Wang, Gu, & Aiken, 2010). Kim (2010) and Su and Huang (2011) were more specific about computer skills. They reported that computer usage skills measured in terms of years of using a computer is a predictor of intention to purchase online. This skill is needed since payment schemes are mostly done online. Furthermore, possible buyers are expected to purchase online when they know how to use different online payment schemes (Abu-Shamaa, Abu-Shanab, & Khasawneh, 2016; Su & Huang, 2011).

Topaloğlu (2012) agreed with the findings of Abadi et al. (2011) in terms of perceived enjoyment. Shoppers intend to purchase online because they found the medium fun, enjoyable, and entertaining. Topaloğlu (2012) called this hedonic value of online shopping. Hedonic value, search intention, and security are found to have an impact on purchase intention of Internet users in Turkey. The researcher investigated both products and services but did not specify them. Finally, Akar and Nasir (2015) showed that previous studies extensively investigated the influence of demographic variables on online purchase intentions. These demographic variables are gender, self-efficacy, level of Internet usage, age, level of education, income, culture, occupation, marital status, credit card usage, residential area, shopping experience, race, and sexual preference.

2.4. Technical-related factors

The most difficult obstacle that shopping websites need to overcome is satisfying haptic perception. Rudolph, Rosenbloom, and Wagner (2004) reported that inability to judge the quality of the product is one of the barriers to online shopping. Jacobs and De Klerk (2010) showed that one obstacle experienced in purchasing textiles is that specific groups of women—South African—prefer to see, touch, and try the textiles before deciding to buy online. This is explained by the fact that customers feel uncertain with the products that they do not see, touch, or feel (Bringula, 2016b; Luo, Ba, & Zhang, 2012). People may opt to buy in physical stores where they personally scrutinize the product (Bringula, 2016a, 2016b).

3. Synthesis of literature review, research framework, hypotheses, and definition of variables

The review of related literature shows the online purchase intentions involving different products and the factors that influence them which were extensively investigated. Moreover, it also discussed the factors considered when buying smartphones in physical stores. Absent in the literature is the investigation of the factors that could influence intended purchase of smartphones in shopping websites. The results of this study can serve as basis for the content of shopping websites.

The study aims to determine the perceptions of possible customers toward buying smartphones in shopping websites. This study hypothesized that the possible reasons that can explain intention to purchase smartphones online can be categorized into three factors—company, personal, and technical. Variables are selected from prior studies which it deemed applicable to the current study. Price, quality, security, and trust are the indicators of company-related factors. They were selected because these are widely discussed in the literature. It is also assumed that these are the four basic factors being considered when buying smartphones online or in physical stores. Perceived risk was treated as a component of security. It can be noted that security is a service-level factor (i.e., a service provided by shopping websites) that must be addressed by online shopping providers.

The second set of variables is called personal-related factors. This involves profile of the consumers, capabilities to use computers and different online payment schemes, interest toward online shopping, and preference to buy in physical stores. The profile of the customers include computer and Internet access at home, gross family monthly income, and previous purchase experience. Convenience and limitations are the variables under the technical-related factors.

The review of related literature served as basis in the formulation of the research paradigm (Figure 1). Hierarchical regression analysis was utilized to examine the net effects of each factor in explaining the intention of respondents to purchase smartphones online (see Figure 1). The analysis can determine the net influence (if there was any) of each independent variable on the dependent variable. Moreover, this analysis would allow the researchers to examine if an “independent variable would have or would not have a significant influence on the dependent variable when grouped to other independent variables” (Bringula, 2013, p. 192). The hypotheses tested are given below.

H_{0a}: Company-related factors do not influence intention to purchase smartphones online.

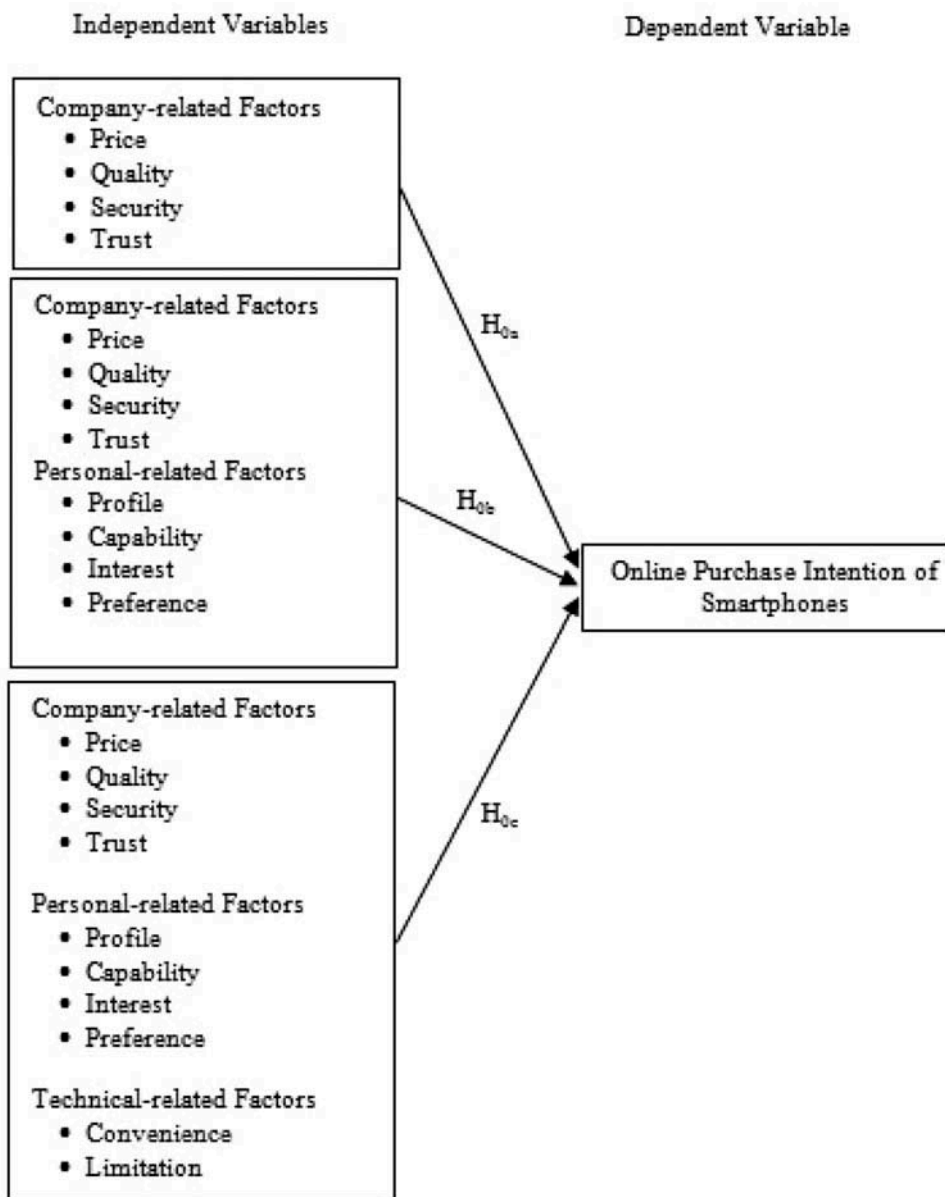
H_{0b}: Company- and personal-related factors do not influence intention to purchase smartphones online.

H_{0c}: Company-, personal-, and technical-related factors do not influence intention to purchase smartphones online.

The variables in the study are defined as follows:

- (1) Company-related factors refer to the factors that shopping website providers can control (e.g., price and quality) and provide (e.g., security and trust) (Bringula, 2016b).
- (2) Price is the perceived competitive monetary value of smartphones that online shopping providers offer.
- (3) Quality is a factor that seeks the perceptions of the respondents on the excellent conditions of smartphones being sold online.
- (4) Security is a form of service of online shopping providers that assure possible customers that their online transaction is safe and protected.
- (5) Trust refers to the service of online shopping providers that guarantee that their business is legitimate and true to their promise to deliver quality smartphones.
- (6) Personal-related factors consist of factors that refer to the individual traits of possible buyers. This includes profile, capability, interest toward online shopping, and preference of buying smartphones (Bringula, 2016b).
- (7) Profile consists of computer and Internet access at home, gross family monthly income, and previous purchase experience.
- (8) Capability is the ability of individual customers to use computers, browse the Internet, and use different forms of electronic payment systems.
- (9) Interest is the “subjective feeling to be engaged (or not to be engaged) in online shopping” (Bringula, 2016b, p. 12).
- (10) Preference measures the inclination of possible customers to buy smartphones in online shopping.
- (11) Technical-related factors refer to the convenience brought by online shopping as well as the limitations of this technology.
- (12) Convenience refers to the attribute of shopping websites which includes ease of browsing the products and simple online payment process. This factor also pertains to availability of provisions for easy product replacement.

Figure 1. Research framework of the study.



(13) Limitation is the inability of the customers to touch, test or scrutinize smartphones that are offered online.

(14) Online purchase intention of smartphones is the likelihood that a customer will buy smartphones in a shopping website.

4. Methodology

4.1. Research design, locale, subjects, sample size, and sampling technique

This descriptive-survey study was conducted in three universities in the University Belt in Manila. All students of the three universities served as the population of the study. Using statistics calculator, a minimum sample size of 68 was computed (Soper, 2016). The sample size was computed based on the following parameters: Anticipated effect size = 0.15,

statistical power level = 0.80, and probability level = 0.05. The sample size was increased to 80 to accommodate unusable/unreturned forms.

The respondents of the study were selected through random sampling. Students were selected through their classroom assignments. All classroom numbers were written on a piece of paper and randomly picked out. The class in the room may compose of 15–40 students. The same processes were carried out in the other two universities. The distributed survey forms are shown in Table 1.

The total number of classrooms of each school is shown in Table 1. A total of 240 forms were retrieved. However, ten forms proved not usable. Hence, only 230 survey forms were used in the analysis. Data gathering lasted for one month. No monetary incentives were given to the students since these are not allowed in the three universities. The assistance of the teachers assigned in the classroom was sought in the distribution of the questionnaires. The average age of the respondents of the study was 19 years old. There was an almost equal number of respondents in terms of gender (male = 111, 48%; female = 119, 52%). All year levels were represented (first year = 41, 18%; second year = 75, 33%; third year = 66, 29%; fourth year = 37, 16%; and fifth year = 11, 4%) in the study.

4.2. Research instrument, data-gathering procedure, and statistical tools used

This study utilized survey forms as the research instrument. The survey form has three parts. The first part gathered the profile of the participants in terms of personal computer ownership, Internet access at home, gross family monthly income, and previous purchase experience in buying smartphones online. The second part gathered data on the perceptions of respondents in buying smartphones online in terms of company, personal, and technical factors. Respondents answered the items of the second part of the instrument using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The last part gathered data on the online purchase intention of smartphones. The items in this part of the instrument can be answered using the scale from 1 (very unlikely) to 5 (most likely). The five-point scale, its verbal interpretation, and mean range utilized in this study are shown in Table 2.

The questionnaire was pretested in one class with 40 students. Factor analysis using principal component analysis was utilized to determine the validity of the items. A minimum value of 0.50 was used to determine the validity of the items. Cronbach alpha analysis was used to determine the reliability of the items. An item is reliable if its Cronbach alpha value (α) is at least 0.70. Table 3 shows that all items were found valid and reliable.

Table 1. Distributed survey forms

School	Total Number of Classrooms	Classrooms Selected	Department	No. of Forms Distributed	No. of Retrieved Usable Forms	Return Rate
NU	42	312, 512, 513, 611	Business, Computing, Health Sciences	80	71	89%
UE	166	304, 208, 206	Business, Information Technology, Engineering	80	80	100
ASAS	16	201, 203, 207	Arts and Sciences, Engineering, Business	80	79	99%
TOTAL				240	230	

Table 2. 5-point scale, mean range, and its verbal interpretation

Weight	Mean Range	Verbal Interpretation
5	4.51–5.00	Strongly agree/Most likely
4	3.51–4.50	Agree/Likely
3	2.51–3.50	Slightly agree/Probably
2	1.51–2.50	Disagree/Unlikely
1	1.00–1.50	Strongly disagree/Very unlikely

Table 3. Validity and reliability of items

Factors	Factor Loadings
Personal—Capability ($\alpha = 0.70$)	
(1) I consider myself as a computer expert.	0.79
(2) My Internet searching/browsing skills are excellent.	0.77
(3) I am knowledgeable in using different electronic payment systems like credit cards, debit cards, GCASH or Smart Padala.	0.66
Personal—Interest ($\alpha = 0.77$)	
(1) I am not interested in online shopping.	0.85
(2) Online shopping has no appeal to me.	0.90
(3) It is more fun to buy in the mall than in online shops.	0.72
Personal—Preference ($\alpha = 0.87$)	
(1) I prefer to see the smartphones personally rather than online.	0.90
(2) I prefer to buy in malls than in online shopping.	0.89
(3) I prefer to see or touch the smartphones before buying it.	0.88
Company—Product Level—Price ($\alpha = 0.70$)	
(1) The prices of the smartphones are less expensive online than in malls.	0.50
(2) In online shopping, the prices of smartphones have big discounts.	0.71
(3) It is easier to compare the prices of smartphones in online shopping than in malls.	0.64
(4) Online sellers provide great deals for smartphones.	0.86
(5) I get the best value of my money when buying smartphones online.	0.64
Company—Product Level—Quality ($\alpha = 0.79$)	
(1) The smartphones are not of good quality.	0.85
(2) The smartphones did not pass quality control.	0.76
(3) The smartphones are below standards.	0.90
Company—Service Level—Security ($\alpha = 0.76$)	
(1) There are many scammers online.	0.82
(2) Online account might be hacked.	0.91
(3) It is not safe to give sensitive information (e.g. credit card number).	0.73
Company—Service Level—Trust ($\alpha = 0.87$)	
(1) I believe that online shoppers can receive their orders on time.	0.73
(2) I am confident that the smartphones being sold online are original.	0.84
(3) I believe that I will receive the ordered smartphones in good condition.	0.83
(4) I believe that online shopping providers will keep their promise of quality smartphones.	0.78
(5) I believe that online shopping providers are legitimate.	0.84
Technical—Convenience ($\alpha = 0.72$)	
(1) It is easier to pay in malls than in an online website.	0.86

(Continued)

Table 3. (Continued)

Factors	Factor Loadings
(2) It is easier to choose smartphones in a mall rather than in online.	0.89
(3) It is easier to replace smartphones bought in malls than in online shops.	0.66
Technical—Limitation ($\alpha = 0.80$)	
(1) It is difficult to scrutinize the overall quality of the smartphones in online shops.	0.85
(2) The designs of the smartphones are difficult to inspect online.	0.86
(3) It is hard to tell if the smartphones being sold online are operational.	0.82
Online Purchase Intention of Smartphones ($\alpha = 0.74$)	
(1) If I will buy a new smartphone, I will buy it online.	0.71
(2) I am willing to use my credit or debit card to buy smartphone online.	0.57
(3) I am willing to give my personal information to buy smartphone online.	0.73
(4) I am willing to pay an extra charge (e.g. delivery charge) in any shopping website.	0.85
(5) I am willing to wait for the delivery of the smartphone bought online.	0.64

The statistical tools used in the treatment of data included frequency counts, percentages, mean, and hierarchical regression analysis. Frequency counts, percentages and means were used to describe the data. Three steps of hierarchical regression analysis at 5% level of probability and 95% reliability were employed to determine which of the factors influence online purchase intention of smartphones. The multicollinearity of the variables was examined through the variance inflation factors (VIF). All VIFs of the IVs were found less than 3.00—less than the threshold value of 10 (Hair, Black, Babin, & Anderson, 2010). Visual inspections of Q-Q plot analyses revealed that the IVs exhibited normal distribution except Security which was a little bit skewed to the left. Nonetheless, it was decided to include the variable security due to its potential theoretical and practical value in the study. Using SPSS version 13, it was revealed that all variables did not violate the assumptions of homoscedasticity.

5. Results

RQ1: Profile of the Respondents

Table 4 shows the profile of the respondents in terms of computer and Internet access at home, gross family monthly income, and online purchase experience. Majority of the respondents have access to computers ($f = 178, 77\%$) and Internet ($f = 190, 83\%$) at home. They came from diverse economic backgrounds but most of them were from families with a gross income of at least Php50,000 ($f = 82, 36\%$). Eighty-nine percent ($f = 204$) of the respondents had no experience of buying smartphones online.

RQ2 and RQ3: Perceptions toward Buying Smartphones Online in terms of Personal, Company, Technical-Related Factors, and Level of Online Purchase Intention of Smartphones

Table 5 shows the perceptions of the respondents in buying smartphones in terms of personal-, company-, and technical-related factors. It was shown that security ($M = 4.45$) has the highest mean rating while quality ($M = 2.56$) has the lowest mean rating among all the factors. Respondents also agreed on the items of preference ($M = 4.21$), convenience ($M = 4.04$), and limitation ($M = 3.96$). They only agree to a lesser extent in terms capability ($M = 2.84$), interest ($M = 2.67$), price ($M = 3.00$), and trust ($M = 2.78$). They also reported that it is unlikely ($M = 2.07$) that they will purchase smartphones online.

Table 4. Profile of the respondents

Profile	Frequency	Percentage
Computer Access at Home		
With computer at home	178	77
Without computer at home	52	23
Internet Access at Home		
With Internet access at home	190	83
Without Internet access at home	40	17
Gross Family Monthly Income		
Below P10,000	16	7
P10,000 to less than 20,000	33	14
P20,000 to less than 30,000	40	17
P30,000 to less than 40,000	27	12
P40,000 to less than 50,000	32	14
P50,000 and above	82	36
Online Purchase Experience		
With online purchase experience	26	11
Without online purchase experience	204	89
TOTAL	230	100%

Table 5. Perceptions of the respondents toward buying smartphones

Factors	Mean (M)	Verbal Interpretation (V.I.)
Independent Variables		
Company		
Price	3.00	Slightly agree
Quality	2.56	Slightly agree
Security	4.45	Agree
Trust	2.78	Slightly agree
Personal		
Capability	2.84	Slightly agree
Interest	2.67	Slightly agree
Preference	4.21	Agree
Technical		
Convenience	4.04	Agree
Limitation	3.96	Agree
Dependent Variable		
Online Purchase Intention of Smartphones	2.07	Unlikely

RQ4: Hierarchical Regression of Levels of Intentions to Purchase Smartphones Online on Company-, Personal-, and Technical-Related Factors of Online Shopping

The results of the three steps of hierarchical regression analysis are shown in Table 6. The first step of hierarchical regression analysis disclosed that company-related factors in terms of price (beta = 0.21), security (beta = -0.22) and trust (beta = 0.37) were found significant predictors of online purchase intention of smartphones. All *p*-values of these factors are all

Table 6. Hierarchical regression of level of intentions to purchase smartphones online on company-, personal-, and technical-related factors of online shopping

Predictor	beta	p-value
<i>Step 1</i> ($R^2 = 0.40$; $\Delta R^2 = 0.40$; $F(4,225) = 37.94$; Sig. = 0.000)		
Price	0.21	0.003
Quality	-0.08	0.152
Security	-0.22	0.000
Trust	0.37	0.000
<i>Step 2</i> ($R^2 = 0.49$; $\Delta R^2 = 0.09$; $F(11,218) = 19.26$; Sig. = 0.000)		
Price	0.09	0.186
Quality	-0.80	0.154
Security	-0.17	0.003
Trust	0.25	0.000
Computer access at home	-0.08	0.211
Internet access at home	0.14	0.038
Gross family monthly income	0.004	0.937
Purchase experience	0.19	0.001
Capability	0.18	0.004
Interest	-0.11	0.092
Preference	0.03	0.646
<i>Step 3</i> ($R^2 = 0.49$; $\Delta R^2 = 0$; $F(13,216) = 16.22$; Sig. = 0.000)		
Price	0.10	0.183
Quality	-0.08	0.145
Security	-0.17	0.002
Trust	0.25	0.000
Computer access at home	-0.09	0.179
Internet access at home	0.14	0.036
Gross family monthly income	0.003	0.948
Purchase experience	0.19	0.001
Capability	0.18	0.005
Interest	-0.11	0.084
Preference	-0.01	0.937
Convenience	0.05	0.534
Limitation	0.003	0.969

less than at 0.05 level. These factors explain 40% ($R^2 = 0.40$) in the variation of online purchase intention of smartphones.

The second step of the analysis revealed that security (beta = -0.17), trust (beta = 0.25), Internet access at home (beta = 0.14), previous purchase experience (beta = 0.19), and capability (beta = 0.18) comprised the second set of predictors. The result of the regression is unlikely to have arisen from sampling error ($p < 0.05$). The second set of factors contributed to explaining the respondents online smartphones purchase intention by 9% ($\Delta R^2 = 0.09$). The last step of the analysis showed that convenience and limitation did not contribute to explaining the online smartphones purchase intention.

6. Discussion

The profile of the respondents revealed that they have access to computers and the Internet. It is interesting to note that there are more participants that can access the Internet than having

personal computers at home. This is because they can access the Internet from their mobile phones. Respondents came from diverse economic backgrounds. Nonetheless, majority of them belonged to a family with at least Php50,000 (approximately \$1,000) gross monthly income. Only a small portion of the respondents had an experience buying products online. The economic background of the respondents revealed that they are economically-capable of buying smartphones.

The results shown in Table 5 disclosed that respondents agree to a lesser extent that the prices of smartphones being sold online are not competitive. They perceived that prices of smartphones are more competitive in online stores than in physical stores. Respondents agree to a lesser extent that the smartphones online are not of good quality. This perception is not desirable for online shopping business because even the legitimate providers can be affected by this perception. This can be explained by the fact that they have high regard to security concerns. They believe that there are many scammers online and an online account is vulnerable to hacking. As a result, they do not give sensitive information online. This can explain the respondents' low trust rating given to online shopping.

Respondents agree to a lesser extent that they are capable of using computers, searching the Internet, and using different electronic payment schemes. This result is unexpected considering the fact that they are educated in the universities. They show little interest toward online shopping because they prefer to inspect and buy the device in physical stores. Furthermore, they perceived that buying the smartphones in physical stores as more convenient than buying the devices online.

The tendency to buy smartphones online is low. Respondents are more likely to buy smartphones in physical stores than in online stores. They will not buy online because they are not willing to risk their personal information, pay delivery charges, and wait for the delivery. Online shopping providers have to confront these obstacles in order to make their business afloat.

There were three steps of hierarchical regression analysis employed in this study as shown in Table 6. The first step shows that price, security, and trust predicted purchase intention. It can be noticed that price and security almost cancel out each other because of their sign and beta weights. This means that when possible customers intend to purchase smartphones online, they tend to equally consider the price of the product and the uncertainty associated in purchasing smartphones. In other words, they tend to evaluate if the online price of smartphones is reasonable enough for risking giving their personal information.

Trust is the defining variable whether the customer has the intention to buy or not buy a smartphone. Trust is the strongest predictor among the three variables. Hence, online shopping providers must ensure that their products and services can be trusted so that customers may intend to buy smartphones online. The three predictors were able to explain 40% in the variation of purchase intention. This means 40% in the variation of online purchase intention of smartphones was accounted to price, security, and trust. This means that customers will most likely buy items on trusted online sellers that provide reasonable price and tight security.

The results of the first step of hierarchical regression showed that the current study agrees with the findings of Delafrooz et al. (2011), Kim et al. (2012), Liao and Cheung (2001), Mehta and Kumar (2012), and Jadhav and Khanna (2016) in terms of price. The current study also has similar results in terms of trust (Abadi et al., 2011; Akar & Nasir, 2015; Delafrooz et al., 2011; Jadhav & Khanna, 2016; Kim, 2010; Kim et al., 2012; Ling et al., 2010). The result in terms of security was consistent to that of Delafrooz et al. (2011), Abadi et al. (2011), and Akar and Nasir (2015).

However, the result of this study is not in agreement with the results of the study of Ling et al. (2010) in terms of quality. In this study, perceived quality did not influence purchase intention of smartphones. This finding offers a vivid contribution to smartphone purchase intention in an online environment. This is explained by the fact that the quality of smartphones is already established. This means

that possible customers must have already evaluated the quality of the smartphones prior to visiting shopping websites. This is confirmed in informal interviews with two respondents. They disclosed that they already know what type and brand of phone to buy before they visited a shopping website. Thus, quality is no longer considered in shopping websites in the context of smartphone purchase.

Internet access at home, previous purchase experience, capability, together with security and trust, were found significant predictors of purchase intention. The change in variance ($\Delta R^2 = 0.09$) indicates that 9% in the variability of purchase intention is on account of Internet access at home, previous purchase experience, and capability. Overall, these variables could nearly explain 50% of the variation in purchase intention. In the third step of hierarchical regression, technical-related factors did not contribute to explaining purchase intention.

Trust and security were found to be consistent predictors throughout the three steps of hierarchical regression analysis. Therefore, online purchase intention of smartphones is all about trust and security. The negative sign of security indicates that online shopping providers must counter the perceived risks.

In the initial analysis, the results disagree with Kim (2010) but agrees with Delafrooz et al. (2011), Kim et al. (2012), Liao and Cheung (2001), Mehta and Kumar (2012), and Jadhav and Khanna (2016). However, in the second step, it can be noticed that price no longer influence purchase intention when personal-related factors are entered in the analysis. Thus, making the results of this study agree with the findings of Kim (2010) and consequently, disagree with the rest. The results suggest that at the outset, possible customers will evaluate the price of the smartphones offered online. If they are amenable with the price, as the second step of regression suggested, this factor is no longer considered. Instead, it is expected that their capabilities, previous online purchase experience, and Internet access at home, perceived security, and trust will go together to determine their purchase intention. In short, price no longer matters at the second stage of regression since the possible customers already evaluated if they can pay for the price of the smartphones. This study unified the conflicting findings in terms of price.

Moreover, Coelho et al. (2013) commented that consumers may be sensitive to price. This sensitivity may be explained by the purchasing capability of the possible customer. Price is an attribute of a product that online shopping providers offer. On the other hand, budget is an amount allotted from an income that is willing to be spent regardless of the price of a product. Therefore, it is suggested that the variable “budget” be included in future studies about online shopping.

It is interesting to note that this study shows that quality is not found to be a significant predictor of purchase intention of smartphones throughout the steps of the regression. This finding agrees with the study of Thamizhvanan et al. (2013) but disagrees with that of Ling et al. (2010) and Bringula (2016a). The reason behind this is that quality attributes of smartphones are not assessed in shopping websites. Instead, as mentioned earlier, the quality of smartphones are evaluated outside the shopping websites. The results have two implications. First, it signals that purchase intention differs in the context of smartphone purchase. Second, the study provides empirical evidence that every online product requires different information and online presentations (Brown et al., 2003; Walia et al., 2015).

7. Implications to theory and practice and recommendations

Absent in the literature is the possible influence of the concept of budget in purchase intention. The price of a smartphone may be expensive but consumers may save money in order to purchase their desired phone. While this is observed among Filipino buyers, there are no rigorous studies that shed light on this matter. Therefore, it is recommended that this construct be investigated by future studies.

The study revealed that trust was the strongest and consistent predictor of purchase intention. Therefore, in terms of practice, online shopping providers must emphasize the legitimacy of their

business. In the Philippine context, a legitimate business has a business permit issued by a local government, a tax identification number issued by a local tax bureau, a business registration from the Securities and Exchange Commission, or a business permit issued by the Department of Trade and Industry. Bringula (2016a) suggested that these permits be highly-visible in the website. It is also necessary to include the business address and telephone number of the company. Online shopping providers must assure their customers that there is always an available customer representative that can answer customers' inquiry. The number of years the company has been operating can also be included in the website. These strategies will create a feeling of security among consumers about the authenticity of the online shopping providers (Bringula, 2016a, 2016b).

The number of smartphones being sold and delivered by online stores can also be posted in the website. A real-time website feature such as how many users are looking at the smartphone, how many units has been sold, and the number of units left may create an atmosphere of authenticity of the business. It is apparent that shopping websites are already subscribed to online security providers that offer protection of online transaction. They include the logo of these online security providers in the website. However, for a non-technical shopper, this logo may be irrelevant to them. Thus, the website must explain in simple terms what these logo means to the transactions of possible customers.

Previous online purchase experience is a predictor of smartphone purchase intention. Hence, shopping websites may include a survey or feedback from the customers about their purchase experience. The results of this survey can then be posted in the website. The findings of the study suggest that online shopping providers have to make the overall purchase of smartphones easy, simple, and short. This should also be reflected in the website. This could entice non-technical users to be confident in using shopping website.

Finally, even though the current study found that quality is not a predictor of smartphone purchase intention, it is still recommended that this factor be retained in the website. Instead of advertising the quality of the smartphones, online shopping providers have to reassure their customers that the devices are from legitimate suppliers. Shopping websites may suggest hyperlinks that can corroborate their claims or post the agreement between them and the supplier.

8. Conclusions

This study determined which of the factors—company, personal, and technical—could influence the online purchase intention of possible smartphones buyers. On the basis of the findings presented, all three hypotheses were partially rejected. It can be concluded that online purchase intention of smartphones are mainly influenced by company-related factors. Therefore, online shopping companies can entice possible customers to purchase smartphones only if their prices are reasonable, their services are secured, and their company is trusted. It was found that trust is the consistent and the strongest predictor of online purchase intention of smartphone. The results of the study showed that possible customers considered different factors when they intend to purchase smartphones online. One key finding of the study is that it disclosed that customers had almost an equal weight on considering price and security when buying smartphones. However, these factors cancel out each other because of their beta signs. The defining factor whether to engage (or not to engage) in smartphone online purchase is based on trust. Therefore, this study was able to achieve its goal of finding the factors that influence online purchase intention of smartphones.

It was also disclosed that price was initially considered when buying smartphones online. However, price can no longer influence purchase intention when all other personal-related factors were considered. Moreover, quality was not found a significant predictor all throughout the three steps of regression. These findings clarified the conflicting results on the influence of price and quality on purchase intention. Another key finding of the study is the possible role of budget in smartphone purchase intention. Thus, future researchers may investigate the influence of budget

on purchase intention. It is also recommended that factors that influence online purchase intention of other mobile devices such as tablets, laptops, and notebooks be investigated.

This study provided empirical evidence that there are factors that could influence purchase of smartphone through online shopping. The results of the study helped us better understand consumer purchase intention of smartphones in an online environment. In business point of view, these factors could serve basis in the continuous improvement of shopping websites and customer service relations that could entice possible customers.

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