The Effect of Subjective Norms on Desire to Purchase Through Applications: The Moderating Role of Electronic Word-of-Mouth

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A B S T R A C T

The rapid development of technology and the use of apps have become significant and influential in today's lives (Zolkepli, Mukhiar, and Tan 2020). Despite the increasing amount of research on the use of apps, little is known about the role they play in shaping the behavior of app consumers. By deploying the framework, the purpose of this study is to explore the factors that affect consumer desire to purchase through apps. To do so, this study uses different variables such as perceived app usefulness and perceived ease of use of apps as independent variables, electronic word-of-mouth moderator, and the desire to purchase apps as dependent variables. This study is theoretically supported by overarching theory, i.e. Goal Model-Directed Behavior (MGB) along with supporting theory, i.e. Model of Technology Acceptance (TAM). Data were collected from (experienced) consumers of different ages (i.e. 18 to 60 years of age) from different nationalities living in Pakistan and Saudi Arabia, with an overall sample size of 371. People living in Pakistan and Saudi Arabia are found to want to purchase products and services through apps only when they find that the app they use is "useful and easy to use" for purchase. Data were analyzed using SPSS 23 and AMOS 24 statistical software. Various tests such as; Skewness and Kurtosis, Correlation Analysis, Confirmatory Factor Analysis, and Structural Equation Modeling have been used to analyze data. The findings of this study will help practitioners, managers, and, in particular, e-retailers to pay attention and take a proactive approach in their businesses to meet the needs and wishes of their consumers.

Keywords: Subjective Norms, Desire, E-WOM, MGB, TAM, Online Consumer Behavior, Apps.

1. INTRODUCTION

Consumers are mainly moved by their preferences to buy goods and services in economically advanced societies. Desire is a driving force behind purchasing in general and online purchasing in particular. Desire is the essential source of life energy (Belk *et al*., 2003) and constitutes the key motivator for decision-making (Perugini and Bagozzi, 2001) and is, thus, a fundamental human motive (Irvine, 2006; Boujbel and d'Astous, 2015). The theory of adaptation also illustrates that a consumer usually experiences satisfaction, relief, and comfort as a result of the effort he/she has made to reach the desired state. On the other hand, the individual's desire for a certain thing/item/service increases strongly when it is either unreachable or less available. It is

more likely that an individual will not calm down or change his or her idea of not buying the specific item/object that he or she has been looking for unless it is not obtained and their need is satisfied (Simmel, 2004; Belk *et al.*, 2003). It would therefore be beneficial for practitioners, retailers, and managers to understand what affects consumers' desire to purchase products and services through applications.

In this digital age, online technology has a significant impact on customer shopping processes and behaviors (Thaichon, 2017). As a result, many large and small businesses want to move into the online sphere (Jensen and Wagner, 2018). The rapid growth in application technology has enabled Pakistani and Saudi Arabian customers to purchase products and services through apps. As time went by, buying behavior in the retail sector has changed and customers have found that they prefer buying products and services online compared to physical shopping in stores. Similarly, the situation has changed from desktop use to shopping applications.

The present-day is said to be an "online business booming era" in which the use of applications as a new medium has rapidly developed both domestically and globally. Applications or "Apps", the world is changing (Taylor and Levin, 2014). The rapid growth of application users has resulted in a remarkable increase in e-commerce and e-commerce, which has had a significant impact on consumer purchasing behavior. E-Marketer (2016) predicts that global e-commerce sales will rise to $4 trillion and that the double-digit growth rate of e-commerce sales will continue through 2020. As with the advancement of network and handheld technologies, apps offer a wide range of services to users (Wu, 2013) to meet their particular needs and desires. Applications have become an essential part of our daily micro-moments providing ubiquitous access to the online market environment. According to Nielsen (2015), people spend an average of thirty hours a month on applications that play a key role in moments such as I-want-to-know, I-want-to-do, I-want-to-go, and I-want-to-buy. In this modern world, applications are used by customers of all age groups as a substitute for the acquisition of different products and services. Consumers search for products and services on apps easily, anywhere, and at any time 24/7 without worrying about the time zone and traffic jam. As a result, today's apps have become one of the most important electronic marketing tools for customer attraction, transaction execution, and service delivery. Thus, a broader picture of consumer app usage is provided by exploring and reviewing that the app's "usefulness and ease of use" impacts the consumer's desire to make purchases through the app.

Electronic word-of-mouth plays an important role when it comes to online, as the widespread use of the internet has begun to spread e-WOM internationally (Jalilvand, 2012). The importance of e-WOM has been increased through online information platforms, including forums, blogs, website sharing, and consumer reviews. As is the case today, the majority of customers are trying to search for available information on products and services on the Internet before their purchase decision. In this context, customers see e-WOM as a significant and reliable source of information (Adjei *et al.*, 2009; Zhu and Zhang, 2010). Since e-WOM is generally acknowledged to have a profound impact on purchases, specifying the moderating impacts of e-WOM can guide consumers in drawing up different opinions for different products and services.

The main focus of the current study is to investigate the effect of perceived app usefulness and perceived ease of use on app purchases in Pakistan and Saudi Arabia, where electronic word-of-mouth plays a moderating role. In doing so, the study used the Goal-Directed Behavior Model (MGB) as a pivotal theory in the context of the psychological perspective and the Technology Acceptance Model (TAM) as a supporting theory in the context of the technological perspective to investigate online consumer purchases through apps. From a constructive and theoretical perspective, the findings of current research may perhaps help practitioners, e-retailers, and managers to develop effective marketing strategies so that they can endorse their products/services and better meet the needs and wishes of their consumers. The findings of this study will show that retailers, practitioners, and managers need to understand the importance of providing consumers with useful and easy-to-use apps, as they may change their purchase preferences and change the dynamics of the

customer-provider relationship. Broadly speaking, this study will help bridge the gap between consumers and retailers (e-retailers).

2. CONCEPTUAL BACKGROUND

2.1. Subscription to Internet and E-Commerce Applications in Pakistan and Saudi Arabia

According to the "Internet World Stats" report in 2017, there were "44.6 million Internet users" over "69.5 million users" as of April 2019 according to the "Pakistan Telecommunications Authority." According to the "News" e-commerce sales in Pakistan amounted to "622 million US dollars" in 2017, 0.34% of the retail market that doubles annually. By 2020, it is expected to reach1 billion US dollars. According to ("export") some famous e-commerce applications and sites in Pakistan are; Daraz, Home Shopping, Alibaba, Zameen, OLX, and PakWheels, etc.

According to "Statista", Saudi Arabia represents "28.5 million Internet users", which is expected to exceed "35 million" by 2023. According to the "Statista" of "21.62 million consumers" in Saudi Arabia, different (e-commerce) apps and sites were used to purchase products and services in 2018 and the consumer ratio is expected to increase by around "22.4 million" in 2019 and the revenue received from the e-commerce market is approximate "$7.335 million" by the end of 2019. Some famous e-commerce applications and sites in Saudi Arabia ('istizada') are Hiraj, Souq, Jarir, Alibaba, and Extra stores, etc.

2.2. Applications (Apps)

In this study, application "app" refers to general (e-commerce) application (software) that can be used and installed on Computers, Laptops, Smartphones, and Tablets for procurement or achievement of any transaction that may result in a purchase that includes "price checking or product locator", etc.

2.3. Perceived Usefulness of App (PU of App)

Perceived Usefulness (PU) originates from the TAM that defines "perceived usefulness as the extent to which an individual believes that using a particular system would improve the performance of his or her job" (Davis *et al*., 1989). This follows from the definition of useful: "ability to be used advantageously".

In this study, "perceived usefulness" refers to "usefulness of the app" when it comes to online shopping. The user perspective of the PU app is the extent to which an individual believes that the "use" of the app would increase his or her purchase.

2.4. Perceived Ease of Use of App (PEoU of App)

Perceived Ease of Use (PEoU) generally referred to as "user-friendliness" is conceptualized in a technology acceptance model as the extent to which an individual believes that the use of a specific technological system is effortless. This follows from the definition of "ease": "freedom from difficulty or great effort." An effort is a "finite resource" assigned by an individual to a variety of activities for which he or she is reliable (Radner and Rothschild, 1975). It is therefore claimed that the application which is perceived as "easy" to be used is more likely to be accepted by people than by others.

In this study, in the context of online purchasing, "perceived ease of use" refers to "ease of application". The PEoU app is the degree to which an entity believes that using a specific application is effortless; easy to identify, easy to understand, and, most importantly, easy to use for a purchase.

2.5. Desire to Purchase Through App

Desire refers to "a state of mind in which an agent has a personal motivation to perform an action or achieve a goal". It is also known as a condition in which people have an internal stimulus that leads to a certain behavior (Perugini & Bagozzi, 2004).

The "driving force" behind consuming products is generally referred to as desire (Boujbel and d'Astous, 2015).

In this study, "desire" is attached with the purchase and linked with apps (intentions to buy products and services using apps).

2.6. Electronic Word-of-Mouth (E-WOM) – The Moderator

Electronic word-of-mouth describes "positive or negative online content on products or services produced or transmitted by customers and made available to a large number of people using the Internet (Thurau *et al.*, 2004)".

The advancement of information technology has significantly changed the way information is shared and has surpassed WOM's traditional limitations (Shin, 2007, Magalhaes and Musallam, 2014). Customers can now share their product-related experiences through various means on the internet, such as email, chat rooms, forums, brand and user groups, etc. (Goldsmith and Horowitz, 2006; Wu, 2013). It is because of the internet that WOM today has spread across the globe excluding the compulsion of individuals physically, naming this trend as e-WOM (Heyne, 2009; Torlak *et al.*, 2014).

"Electronic word-of-mouth" is defined in this study as "the act of exchanging marketing (products or services) information between online consumers".

2.7. Model of Goal-Directed Behavior (MGB)

Theorizing uses MGB as an overarching theory, which is proposed by Perugini and Bagozzi (2001) MGB is "an extension of TPB whose main focus is on the pre-volitional stages of decision-making". Furthermore, based on existing literature, the MGB whose main construct is desire offers a complicated decision-making perspective in the field. "Although the MGB is initially conceived as an amalgamation of goal and behavioral criteria, with an emphasis on expected affective reactions to behavior comparative to goals (Perugini and Bagozzi, 2001), it is more important to consider MGB as a model at a behavioral level".

MGB is described to clarify the wide variation in an individual's intent and behavior compared to TPB and TRA (Carrus, Passafaro, and Bonnes, 2008; Esposito, Bavel, Baranowski, and Brown, 2016; Taylor, Bagozzi, and Gaither, 2005). To explain the behavioral intentions of individuals, MGB has recently been widely used in a range of domains including "tourist behavior" (Han and Hwang, 2014; Kim, Lee, Song, Bendle, and Han, 2012; Meng and Han, 2016; Song, Lee, Reisinger, and Xu, 2016), "mobile use" behavior (Kim and Preis, 2016), "exercise and health" (Baranowski *et al.*, 2013; Hingle *et al.*, 2012), "airport shopping" (Han, Kim, and Hyun, 2014), and "restaurant repeat patronage" (Han and Ryu, 2012). To investigate the online shopping behavior of individual former researchers, TPB (Cheng and Huang, 2013; Choi and Geistfield, 2004; Hansen, Jensen and Solgaard, 2004) has been used in comparison with MGB, a more advanced theory as a basic theory. Besides TPB, few studies have also used TAM and UTAUT to understand the intent of an individual's online shopping behavior (Smith *et al.*, 2013). Recently mentioned models are said to focus more on the consumer's perception of "perceived ease of use" and "perceived usefulness" to the technological system, i.e. applications compared to individual perceptions of behavioral performance. In this context, it can be stated that MGB is "substantially an appropriate framework for the exploration of online shopping behavior because of its objective behavior (Bagozzi and Dholakia, 1999)". The emotional response of the consumer is generated following the online purchase to recognize the completion of non-fulfillment of the goal. As a result, MGB has been used as a basic theory to assess the impact of customers' desire to purchase products and services.

2.8. Technology Acceptance Model (TAM)

Theorizing uses TAM as a supportive theory, which was introduced by Davis (1989) to explain the acceptance of information technology. Davis adopted the TRA by developing two key beliefs that explain the use of

technology. The first belief "perceived usefulness" is defined by Davis as "the degree to which a person believes that using a particular system would improve the performance of his or her job." The second belief is defined as "perceived ease of use", defined as "the degree to which a person believes that using a particular system would be effortless".

Recently simplified TAM (Venkatesh and Davis, 2000) including previous "usefulness and ease of use" circumstances, specifically subjective standards and output quality, have been recognized for the recognition of the relationship between "humans and technology" through "perceived usefulness" and "perceived ease of use". According to Davis (1989), "the behavior of the use of information technology begins with perceived usefulness and perceived ease of use of information technology". Thus, "usefulness and ease of use" are most likely to influence the individual's attitude to the acceptance of technology along with the explanation of the intention to use technology.

In summary, the contribution of TAM and other related models is that they provide explanations for online transactions that are conducted from a technological point of view. In this context, these models highlight the importance of usefulness and usability of the application. Besides, these models also draw attention to the "hedonic features" of the technology that reveal the impact of the features on the consumer's intentions while purchasing online.

2.9. Theorizing

The present study uses MGB as a core theory proposed by Perugini and Bagozzi (2001) based on TPB because of "desire" which is an essential antecedent of the intention of the decision-maker and the key variable of MGB and this study. MGB focuses on the perception of individuals performing a certain behavior (Bagozzi & Dholakia, 1999). This study also uses TAM as a supporting theory because of "perceived usefulness" and "perceived ease of use" (two key elements of TAM and supportive variables of this study). TAM focuses on the consumer's perception of the technology system, i.e. "perceived ease of use" or "perceived usefulness" (Bagozzi & Dholakia, 1999).

This study focuses only on key elements of MGB and TAM as they fit the proposed model so that no other variables or elements of MGB and TAM are used in this study. Accordingly, this study speaks of a desire that is not present in TAM, as TAM generally speaks of intention but not of desire. Whereas MGB generally speaks of desire but not of technology, it is, therefore, necessary to use both theories as they both suit the proposed model of this study.

Although together with two MGB and TAM theories, this study also uses e-WOM as a moderator. E-WOM has a significant role to play in the dissemination of consumer ideas (Bickart and Schindler, 2001; Godes and Mayzlin, 2004; Jalilvand, 2012). E-WOM provides information through communication to consumers through internet-based vendor platforms and the use of products and services (Westbrook, 1987). Also, 'e-WOM has a vital effect on product reviews and consumer purchase intentions' (Sachse and Mangold, 2011). The present study, therefore, uses e-WOM as a moderator to gain a better understanding of consumer desires and intentions.

Talking about the hypothesis, this study suggested three hypotheses in total. The first hypothesis (H1); "the perceived usefulness of the app is related to the desire to purchase through the app". In our model, PU is examined about consumer applications. In general, PU is a strong behavioral intent predictor that is taken into account as an intention to use online purchasing (Venkatesh and Bala, 2008). The second hypothesis (H2); "The perceived ease of use of the app is related to the desire to purchase through the app". In our model, PEoU is examined to the use of consumer apps. In general, PEoU has a significant positive impact on the intent to use online purchasing applications (Lee *et al*., 2003). Third hypothesis (H3); "electronic word-of-mouth plays a moderating role between perceived app usefulness, perceived app ease of use, and app-purchasing". In general, 'e-WOM has a critical impact on consumers' purchase intentions' (Zhu & Zhang, 2010; Bambuer

Sachse & Mangold, 2011) thus using e-WOM as a moderator will give consumers a better understanding of their purchase desires.

2.10. Hypotheses

2.10.1. Relationship Between the App's Perceived Usefulness (IV) and the Desire Purchase Through the App (DV)

Customers perceive "perceived usefulness" as a performance enhancer in the context of e-shopping (online buying), which is most likely to improve a customer's performance during online shopping. The "utilitarian factor" affecting online shopping is considered to be PU (Davis, 1989). Customers are inclined, according to TAM, to use that specific technology (application or website) that has a significant impact on their performance. According to Zhou *et al*. (2007), "it is a client's chance that online shopping will increase its efficiency, which will have a positive impact on the entire purchasing process". Bhattacherjee, (2001) says that the purchase of that particular product is likely to be preferred when use is perceived to be the helpful customer. With the aid of the above discussion, the following hypothesis is established:

H1: There is a relationship between the perceived usefulness of an app with a desire to purchase through the app.

2.10.2. Relationship Between Perceived Ease of Use of App (IV) and the Desire to Purchase Through App (DV)

In the context of online purchases, "perceived ease of use" is perceived by customers to be able to interact with e-commerce applications and websites. It is also said to have a "positive effect" on the desire and intent to purchase. Once customers find that interaction with an online shopping application or website is uncomplicated, accessing product information is simple and the payment method is easy for customers to prefer online shopping. Van der Heijden (2004) also found that perceived ease of use is a "hedonic-oriented factor". Customers are expected to have more interaction with the online shopping source in the event of convenience (Wallace and Barkhi, 2007). In this context, it is concluded that PEoU significantly affects the desire for online purchases. Similarly, this study predicts that:

H2: There is a relationship between the perceived ease of use of the app and the desire to purchase through the app.

2.10.3. Relationship Between Electronic Word-of-Mouth (Moderator) and Perceived Usefulness of App (IV), Ease of Use of App (IV), and Desire to Purchase Through App (DV)

App users, either "intentionally or unintentionally", are exposed to a large amount of e-WOM information (Erkan, and Evans, 2016). However, it is not necessary for the entire e-WOM information posted on the app to have the same impact on consumer purchases; it is likely to have a variation in the level of impact. E-WOM has long been seen as an "influential marketing instrument" (Bickart and Schindler, 2001; Kumar and Benbast, 2006; Zhang, Cracium, and Shin, 2010). Consumers are most likely to seek or explore information that has been made available to users in the past before purchasing products and services so that they can feel comfortable while making purchase decisions (Pitta and Fowler, 2005). Thus, e-WOM, along with PU, PEoU, and Desire, plays a vital role when it comes to online purchases through apps. In this study, by linking MGB (Desire) and TAM (PU and PEoU), we predict that consumers who accept e-WOM information are expected to purchase products and services. The following hypothesis is therefore proposed:

H3: Electronic word-of-mouth plays a moderating role between perceived app usefulness, perceived app ease of use, and app-purchasing.

2.10.4. The Effect of Subjective Norm on Desire to Purchase through Applications: The Moderating Role of Electronic Word-of-Mouth (Figure 1)

Perceived Usefulness App has a positive and direct relationship with Desire to Purchase App. Perceived Ease of App Use has a positive and direct relationship with Desire for App Purchase. Electronic Word-of-Mouth does not moderate the range between Perceived Usefulness of the App, Perceived Ease of Use of the App and Desire to Purchase through the App.
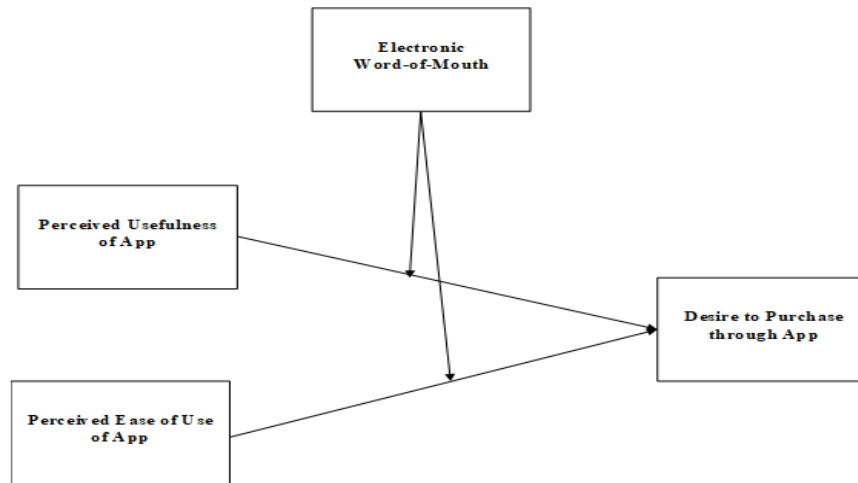
Figure 1. Research Model.

3. METHODOLOGY

3.1. Sample and Procedures

Data collection of snowball sampling techniques was used to collect data from respondents from different nationalities living in Pakistan & Saudi Arabia who have access to the Internet and Applications. Data was collected from people (consumers) using different online e-commerce applications to purchase products and services. The cover letter was attached to the questionnaire, which explains the purpose of the questionnaire and informs the respondents that the purpose of the questionnaire is academic and that their responses will be kept confidential. The soft and hard forms of the questionnaire have been distributed. The total number of questionnaires was 400 out of which 29 samples were invalid due to misunderstanding and incompleteness of the questionnaires. The sample size of this study is therefore 371.

The demographic data of the respondents have been summarized as follows. The common age group that responded in the majority ranges from "18 to 25" (i.e. 53.4 percent). On the other hand, respondents with age groups ranging from "26 to 40" were estimated to be (32.3 percent) of the total respondents, while respondents above the age range of "41 to 60" were estimated to be (32.3 percent) of the total respondents (14.3 percent). Among the total number of respondents (50.7%) were male and (49.3%) female. 224 (60.4%) of the respondents were single, while 147 (39.4%) were married. Talking about nationality; 282 (76 percent) of respondents were Pakistanis, 31 (8.4 percent) were Saudis, and 58 (15.6 percent) of respondents were from different nationalities, such as Egyptians, Indians, Syrian, Lebanese, Sudanese, Turkish, Yemeni, Afghani, etc. 191 (51.5 percent) of respondents were Pakistanis, while 180 (48.5 percent) of respondents were Pakistanis. Talking about the frequency of use of applications (Daraz) was the most widely used application in user surveys (34.5 percent). Others include (Souq (18.3 percent)), (OLX (9.2 percent)), (Jollychic (7.5 percent)), etc. (65.2 percent) users who shop online between "1 to 3 times" per month, while (6.7 percent) users shop between "10 to 12 times" per month.

3.2. Measures

Instruments used for data collection have been adopted from prior research and, where necessary, have been modified to fit the context of the current study. The questionnaire used the English language. All items were measured with "Seven Likert Scale (1= Strongly Disagree, 2= Somewhat Disagree, 3= Slightly Disagree, 4= Neutral, 5= Slightly agree, 6= Somewhat agree, 7= Strongly agree)". The questionnaires first started with the basic question; "Do you purchase online?" 'Includes demographic variables such as age, gender, marital status, nationality, country of residence, etc.' and then variables such as;

The Perceived Usefulness of the app is measured by four scale items developed by F. D. Davis (1989) and adapted from Cheng, Lam, and Yeung; (2006). Example item: "I think that using the app would make it possible for me to perform my tasks quickly".

Perceived Ease of Use of the App is measured by three scale items developed by Davis, 1989; Moon and Kim, 2001; Hassanein, Head, 2007 and adapted by Çelik and Yilmaz (2011) respectively. Example item: "It was easy to learn how to use the application".

The desire to purchase through the App is measured by three scale items from Bagozzi and Dholakia (2006). Example item: "I want to purchase using an app".

Electronic Word-of-Mouth is measured with six scale objects from Sachse and Mangold (2011). Example item: "I often read online product reviews from other consumers to know what products/brands make good impressions on others".

3.3. Data Analysis Techniques and Methods

For data analysis, this study proposes different types of tests, such as Skewness and Kurtosis, Correlation Analysis, CFA, and SEM.

Questionnaires were distributed among 400 customers through a snowball sampling technique that was purchased online from a variety of applications. 371 questionnaires were used and 29 responses were incomplete and misused. Thus, three hundred and seventy-one (371) is the total sample size of the current study (response rate of 92.75 percent).

4. RESULTS

4.1. Correlation Analysis

The current study calculated the mean and standard deviation of each variable, and then developed the hypothesis test for the variables used in the matrix of the correlation coefficient. Table **1** shows the mean, standard deviation, reliability, and analysis of all b/w scale correlations. Analysis of Table **1** shows that all variables are positively correlated at P <0.01 level.

Table 1. Correlations.

Variables	Mean	SD	PU	PEOU	DESIRE	F-WOM
PU	5.1867	1.47629	0.916			
PEOU	5.4268	1.46949	0.755**	0.884		
DESIRE	4.9443	1.58291	0.645**	0.603**	0.912	
F-WOM	5.1406	1.49521	0.604**	0.641**	0.510**	0.915

**: Correlation is significant at the 0.01 level (2-tailed).

4.2. Descriptive Statistics

This study carried out descriptive statistics on all variables used in this study, as shown in Table **2**. Descriptive statistics show data normality (skewness and kurtosis). Data is normal as all variables have "skewness and kurtosis" values lower than "+/-2" as recommended by George and Mallery (2010).

Table 2. Descriptive Statistics.

	N	Minimum	Maximum	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
PU	371	1.00	7.00	-1.010	0.127	0.607	0.253
PEoU	371	1.00	7.00	-1.231	0.127	1.252	0.253
Desire	371	1.00	7.00	-0.760	0.127	-0.028	0.253
E-WOM	371	1.00	7.00	-0.870	0.127	0.298	0.253

PU = Perceived Usefulness of App, PEoU = Perceived Ease of Use of App, Desire = Desire to purchase through App, E-WOM = Electronic-Word-of-Mouth

4.3. Confirmatory Factor Analysis (CFA)

This research was an attempt by CFA to inquire more useful results. A separate model for each variable is executed and the model fit values for each variable are shown in Table **3**. The CMIN/DF values of all variables are acceptable because they are less than or near (3) as recommended (Hu and Bentler, 1999; Hair *et al.*, 2010; Tanaka, 1993). NFI, RFI, IFI, and TLI values are greater than (0.90) which shows that these values are accepted, as Hair *et al.* (2010) suggested that NFI, RFI, IFI, and TLI values should be higher than (0.90) to present good model fits. The RMSEA value is less than (0.08) which shows that these values are accepted, as (Hu and Bentler, 1999; Hair *et al.*, 2010; Tanaka, 1993) suggested that the RMSEA value should be less than (0.08) to show acceptance of the model fits.

Table 3. Model Fits of Variables.

Model	CMIN	CMIN/DF	NFI	RFI	IFI	TLI	RMSEA
PU	0.571	0.571	0.999	0.997	1.000	1.002	0.000
PEoU	1.642	1.642	0.997	0.992	0.999	0.997	0.042
Desire	3.060	3.060	0.996	0.988	0.997	0.992	0.075
E-WOM	26.335	3.292	0.983	0.968	0.988	0.978	0.079

PU = Perceived Usefulness of App, PEoU = Perceived Ease of Use of App, Desire = Desire to Purchase through App, E-WOM = Electronic-Word-of-Mouth

4.4. Test of Moderation & Hypotheses Testing

To test the moderator, the slope test will be used to check the moderating effect of the e-WOM between the PU of the app and the desire to purchase via the app, and the PEoU of the app and the desire to purchase via the app. The slope test is shown and explained with the help of the Figures **2** & **3**. Finally, the values of R2 and d R2 change are indicated to represent the proportion of the variance.

4.4.1. Impact to Test the Hypothesis Relationships Between IV1 (PU of App), DV (Desire to Purchase Through App), and Moderator (E-WOM)

4.4.1.1. E-WOM Moderation Test between PU of App & Desire to Purchase through the App (Figure 2)

Slope test (moderation test) was performed as shown in Figure **2** to test the moderating effect of e-WOM (moderator) on the perceived usefulness of the app (independent variable) and the desire to purchase through the app (dependent variable) and the result shows that e-WOM diminishes the positive relationship between the perceived usefulness of the app and the desire to purchase through the app. Figure **2** shows two slope lines; a high e-WOM line (orange color) and a low e-WOM line (blue color) are shown. The result (Figure **2**) shows that there is a slight bending of the slopes of the lines which is not sufficient evidence of a strong moderation effect.
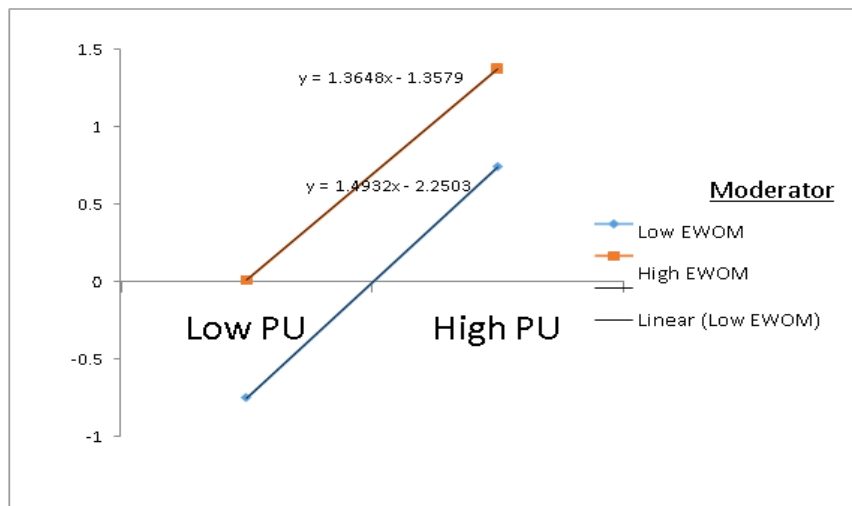

Figure 2. E-WOM moderation test between PU & Desire

4.4.2. R Square and R Square Change Value of E-WOM Between PU of App and Desire to Purchase Through the App

Talking about the values of R-square (R2) and R-square change (Table **4**), the value of R-square (R2) is (0.4421) and the value of R-square change is (0.0030), which shows that the impact of e-WOM on perceived app usefulness and the desire to purchase through the app is much lower, so there is very little moderation, as there is not enough evidence of a strong moderation effect.

Table 4. R^2 and R^2 change value of E-WOM between PU & Desire.

R	R^2	MSE	F	df_1	df_2	P
0.6649	0.4421	1.409	96.924	3.000	367.000	0.0000

4.4.3. Impact to Test the Hypothesis Relationships Between IV2 (PEoU of App), DV (Desire to Purchase Through App), and Moderator (E-WOM)

4.4.3.1. E-WOM Moderation Test Between PEoU of App and Desire to Purchase Through the App (Figure 3)

Slope test (moderation test) was performed as shown in Figure **3** to test the moderating effect of e-WOM (moderator) on the perceived ease of use of the app (independent variable) and the desire to purchase through the app (dependent variable) and the result shows that e-WOM diminishes the positive relationship between

the perceived ease of use of the app and the desire to purchase through the app. Figure **3** shows two slope lines; a high e-WOM line (orange color) and a low e-WOM line (orange color) are shown (blue color). The result (Figure **3**) shows that there is a slight bending of the slopes of the lines which is not sufficient evidence of a strong moderation effect.
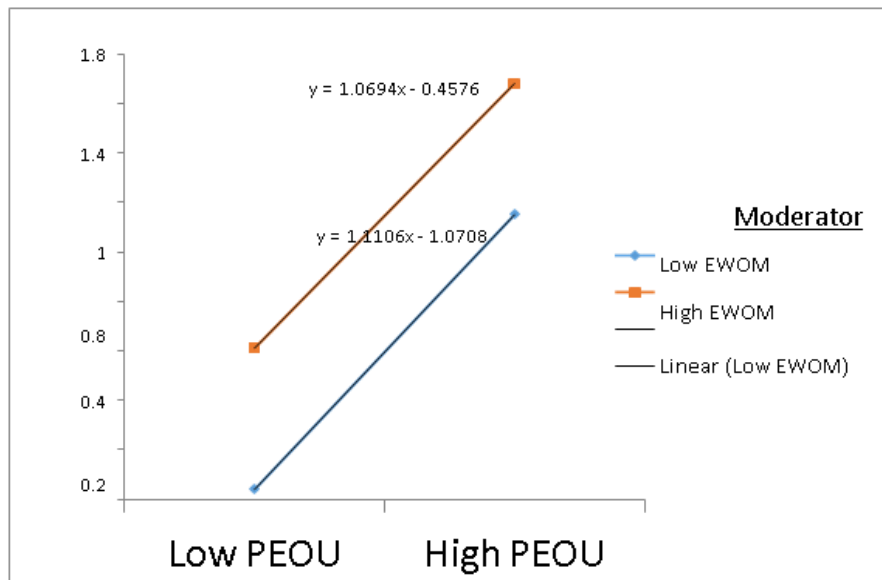

Figure 3. E-WOM moderation test between PEoU & Desire.

4.4.4. R Square and R Square Change Value of E-WOM Between PEoU of App & Desire to Purchase Through the App

Talking about the values of R-square (R2) and R-square change (Table **5**), the value of R-square (R2) is (0.3894) and the value of R-square change is (0.0003), which shows that the impact of e-WOM on perceived app ease of use and the desire to purchase through the app is much lower, so there is very little moderation, as there is not enough evidence of a strong moderation effect.

Table 5. R^2 and R^2 change value of E-WOM between PEoU & Desire.

R	R^2	MSE	F	df_1	df_2	P
0.6240	0.3894	1.5423	78.0271	3.0000	367.0000	0.0000

Table 6. Shows all hypotheses hypothesized in the present study and their results.

S. No.	Hypotheses	Accepted/ Not Accepted
1	H1: There is a relationship between the perceived usefulness of the app and the desire to purchase through the app.	Accepted
2	H2: There is a relationship between the perceived ease of use of app and the desire to purchase through the app.	Accepted
3	H3: Electronic word-of-mouth plays moderating role between perceived usefulness of app, perceived ease of use of app and desire to purchase through app.	Not Enough Effect

5. DISCUSSION

Current research focuses on the role of desire in generating purchases through apps. Therefore, this study built its research model based on MGB, which says "desire leads to intentions and intentions leads to action" and MGB also fits our dependent variable "desire to purchase through the app". Besides, this study also used TAM as a supporting theory, which talks about technology, and TAM also suits our independent variables "perceived app usefulness" and "perceived app ease of use". Besides, this study used "electronic word-of-mouth" as a moderator.

The study aimed to check the effectiveness of the app's PU and the app's PEoU on purchase through the app in the presence of e-WOM as a moderator.

Results have shown that PU of app and PEoU of app effect want to purchase via app, while e-WOM is slightly moderate, which is not enough, as it needs further analysis to confirm the effect. The findings of this study show that the app's usefulness and ease of use reinforce and impact the consumer's desire to purchase products and services using apps. This study, therefore, suggests that online retailers and managers pay attention to using a "proactive approach" and provide a better online shopping environment to increase the number of customers using their apps. They should ensure that their plans and strategies are competitive and meet the needs of their customers. Furthermore, customers are expected to feel emotionally positive while browsing and purchasing fine applications with a high level of security and information (Ethier *et al*., 2006). Thus, the high quality of the application may prompt the intention of the customer to recur again and again (Chiu and Won, 2016b).

5.1. Limitations and Future Directions

This study had limitations that could provide opportunities for future exploration. First, this study collected data from 371 (experienced) consumers living in Pakistan and Saudi Arabia belonging to different nationalities. To increase the generalizability of findings, future researchers may replicate this model on online shopping websites instead of applications with a larger sample size (about 500) and target specific (one) country and audience (nationality) to further uncover the formation of desires in different contexts and cultures. Second, this study is carried out by taking "primary data" from consumers, so future researchers may take "secondary data" to obtain more accurate results. Third, since the proposed model only added two key TAM beliefs and key MGB elements and did not use whole models, it is therefore suggested that future researchers include other TAM and MGB constructs for better results. Moreover, this study focused on online purchases through apps, and on what customers purchase online, this study includes a wide and open spectrum of goods and services. Due to the different characteristics of goods and services, in future research, it is essential to classify goods and services in a variety of categories. Besides, e-WOM was used as a moderator in this study and the result showed that e-WOM is slightly moderate between subjective standards and the desire to purchase via app, but further analysis is needed to confirm the effect.

DISCLOSURE

This paper is extracted from author's own research thesis.

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APPENDICES

Mode 1 Summary

	Coeff	SE	t-test	p-value	LLCI	ULCI
Constant	0.3394	0.5056	0.6712	0.5025	-0.6549	1.3336
PU	0.7145	0.1158	6.1693	0.0000	0.4867	0.9422
EWOM	0.3499	0.1177	2.9739	0.0031	0.1185	0.5813
Int-1	-0.0321	0.0228	-1.4107	0.1592	-0.0769	0.0127

Test(s) of Highest Order Unconditional Interaction(s):

	R^2-change	F	df1	dF2	P
X*W	0.0030	1.9901	1.0000	367.0000	.1592

Mode 1 Summary

	Coeff	SE	t-test	p-value	LLCI	ULCI
Constant	0.8708	0.5252	1.6581	0.0982	-0.1620	1.9036
PEoU	0.5450	0.1117	4.8777	0.000	0.3253	037647
EWOM	0.2757	0.1362	2.0245	0.0436	-0.0079	0.5436
Int-1	-0.0103	0.0240	-0.4285	0.6686	-0.0575	0.0369

Test(s) of Highest Order Unconditional Interaction(s):

	R^2-change	F	df1	dF2	P
X*W	0.0003	0.1836	1.0000	367.0000	0.6686