THE FACTORS AFFECTING MOBILE SHOPPING INTENTION: A CASE OF SMALL HOME APPLIANCES IN LIBYA

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TITLE PAGE

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DOCTORAL THESIS

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ÖZET

MOBIL ALIŞVERIŞ NIYETINI ETKILEYEN FAKTÖRLER: LIBYA'DA KÜÇÜK EV ALETLERI ÖRNEĞI

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Danışman**:** Prof. Dr. Sevgi A. ÖZTÜRK

Bu çalışma, UTAUT2 modeli ile Finansal Risk, Performans Riski, Zaman Riski, Sahip Olma kolaylığı, Satın Alma Sonrası Kolaylık ve Güven değişkenlerinden oluşan bir grubun etkisinin Mobil Alışverişin nıyetını üzerindeki rolünü incelemektedir. Ayrıca moderatör değişkenler olarak yaş ve gelir değişken-lerinin etkisini incelenmektedir. Veriler Libya'daki 706 mobil alışveriş kullanıcısından çevrimiçi anketler aracılığıyla toplanmıştır. Bu faktörlerin küçük ev aletleri satın almak için mobil alışverişin nıyetını üzerindeki etkisini analiz etmek için Kısmi En Küçük Kareler Yapısal Eşitlikler Modellemesi (PLS-SEM) kullanılmıştır.

Sonuçlar, Performans Beklentisi, Alışkanlık, Fiyat Değeri, Sosyal Etki, Zaman Riski yapılarının her birinin mobil alışverişin kabulüne ve sürekli kullanımına katkıda bulunduğunu ortaya koymuştur. Çaba Beklentisi ve Kolaylaştırıcı Koşullar, Fiyat Değeri, Sosyal Etki ve Finansal Risk, mobil alışverişin nıyetına katkıda bulunmamıştır. Yaş değişkeni, Çaba Beklentileri, Sosyal Etki, Alışkanlık ve Satın Alma Kolaylığı mobil alışverişin nıyetında orta düzeyde rol oynamıştır. Performans Beklentisi ile orta düzeyde değişken olarak gelir değişkeninin yalnızca bir katkısı olmuştur.

Bu araştırma, çevrimiçi mobil alışveriş niyetine yönelik bir anlayışın geliştirilmesine katkıda bulunarak pazarlama literatürünü zenginleştirmektedir. Ayrıca bu araştırma,

mobil alışveriş niyetini UTAUT2 modellerini kullanarak incelemek isteyen araştırmacılara katkı sağlamaktadır.

Anahtar Sözcükler: UTAUT2, Algılanan riskleri, Sahip Olma Kolaylığı, Satın Alma Sonrası Kolaylığı, Güven, Kabul ve Mobil Alışveriş Niyeti, SPSS, PLS-SEM.

ABSTRACT

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This study examines the role of the influence of variables group which are: Financial Risk, Performance Risk, Time Risk, Possession Convenience, Post-Purchase Convenience and Trust, with the UTAUT2 model on Behavior intention of mobile shopping. In addition to examines the effect of age and income variables as moderator variables. An online questionnaire was used to collect data from 706 mobile shopping users in Libya. Partial Least Squares Structural Equations Modeling (PLS-SEM) was used to analyze the effect of these factors on Behavior intention of mobile shopping to purchase small home appliances.

The results revealed that each of the six constructs, which are Performance Expectancy, Habit, Price Value, Social Influence, Trust, and Time Risk, contributed on Behavior intention of mobile shopping to purchase small home appliances. The Expectation of Effort and Facilitation Conditions, Price Value, Social Influence, and Financial Risk did not contribute on behavior intention of mobile shopping to purchase small home appliances. The Age variable played a moderate role in each of the Effort Expectations, Social Influence, Habit and Purchase Convenience on Behavior intention of mobile

shopping to purchase small home appliances. There was only one contribution of the Income variable as a moderate variable with Performance Expectancy.

This research enhances the marketing literature by contributing to the development of an understanding of behavior intention of mobile shopping to purchase small home appliances. Also, this research enhances the immediate implications for researchers who wish to examine the behavior intention of mobile shopping to purchase small home appliances using UTAUT2 models.

Keywords: UTAUT2, Perceived risks, Possession convenience, post-purchase convenience, Trust, Behavior intention of mobile shopping, SPSS, PLS-SEM.

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ETİK İLKE VE KURALLARA UYGUNLUK BEYANNAMESİ

Bu tezin bana ait, özgün bir çalışma olduğunu; çalışmamın hazırlık, veri toplama, analiz ve bilgilerin sunumu olmak üzere tüm aşamalarında bilimsel etik ilke ve kurallara uygun davrandığımı; bu çalışma kapsamında elde edilen tüm veri ve bilgiler için kaynak gösterdiğimi ve bu kaynaklara kaynakçada yer verdiğimi; bu çalışmanın Anadolu Üniversitesi tarafından kullanılan "bilimsel intihal tespit programı"yla tarandığını ve hiçbir şekilde "intihal içermediğini" beyan ederim. Herhangi bir zamanda, çalışmamla ilgili yaptığım bu beyana aykırı bir durumun saptanması durumunda, ortaya çıkacak tüm ahlaki ve hukuki sonuçları kabul ettiğimi bildiririm.

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the undersigned hereby truthfully declare that this thesis is an original work prepared by me; that I have behaved in accordance with the scientific ethical principles and rules throughout the stages of preparation, data collection, analysis and presentation of my work; that I have cited the sources of all the data and information that could be obtained within the scope of this study, and included these sources in the references section; and that this study has been scanned for plagiarism with "scientific plagiarism detection program" used by Anadolu University, and that "it does not have any plagiarism" whatsoever. I also declare that, if a case contrary to my declaration is detected in my work at any time, I hereby express my consent to all the ethical and legal consequences that are involved.

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Salah A. MOHAMED ABDULGADER

(Name and Surname of the Student)

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INDEX OF ICONS AND ABBREVIATIONS

PE : Performance Expectancy

EE : Effort Expectancy

SI : Social Influence

FC : Facilitating Conditions

PV : Price Value

H : Habit

BI : Behaviour Intention

FR : Financial Risk

PR : Performance Risk

TR : Time Risk

PC : Possession Convenience

PPC : Post-Purchase Convenience

TH : Trust

CR : Composite Reliability

AVE : Average Variance Extracted

HTMT : Heterotrait-monotrait

Chapter 1: INTRODUCTION

1.1 Background

Shopping is considered a consumption activity that can be accessed in any number of ways, based on the preferences and specific contexts of individual consumers (Bäckström, 2011). Shopping can be categorized into two categories, economic shopping and recreational shopping. In economic shopping, the primary benefit is time or savings on cash basis. Consumers are not mainly interested in shopping activity and have no neutral stance against economic shopping. Consumers who engage in recreational shopping show an interest in and enjoy their shopping, which is why it is also referred to as a leisure-time activity (Bäckström, 2006).

At the time of the emergence of the Internet and rapid technological developments that include smart phones, other classifications of shopping have emerged other than the previous classifications, namely, shopping without the use of the Internet, it is called offline shopping, and shopping using the internet is called online shopping, where shopping without using a kind of traditional shopping has become.

Offline shopping, or traditional shopping, is a social interaction that involves face-to-face communications with customers (Everts and Jackson, 2009; Pantano and Gandin, 2017). Traditional shopping takes place in a face-to-face environment with sellers, where sellers have the opportunity to learn more information about customers (Frow and Payne, 2007). Online shopping is defined as searching for products or services, comparing prices, etc. using the internet, but does not necessarily conclude with an actual purchase (Reynolds, 2000). Customers have the option of shopping online using a variety of gadgets such as desktops, laptops, tablets, and smartphones (Kumar and Khurana, 2019). Generally, there are three basic general ways users can make online shopping; applications loaded on smartphones, mobile web, and web pages on computers (Torres et al., 2016; Papadopoulos et al., 2017). Shopping on mobile devices, however, can bring a high degree of complementary benefit to users, allowing users to browse or purchase products and services regardless of place ad time (Yang and Kim, 2012; Persaud and Azhar, 2012).

Mobile shopping and e-commerce on smartphones have become one of the defining features of the technological world today, as a major statistics and market research organization Statista (2020) predicted at least 3.5 trillion U.S. dollars in global e-commerce sales in 2019. At the beginning of 2020, there were 4,78 billion smart phone owners worldwide. Moreover, the pandemic of Covid-19 has emphasized the importance of

communication for the social and economic well-being of society. Considering the restrictions on movement and gatherings imposed by COVID19, there is an increased need for high-speed communications that are fast, reliable, and continue, as well as the socio-economic benefits that come with them (GSMA, 2020).

1.2 Problem of the Study

Understanding individual acceptance of information technology and its research use has been an important field of study recently in administrative and marketing sciences. To describe the factors influencing the continuance intention to shop using mobile phones, it is necessary to know the key points and particular details of the theories and models on technology. A number of theoretical models have been put forward to explain technology acceptance, such as Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), Social Cognitive Theory (SCT), Innovation Diffusion Theory (IDT), the Technology Acceptance Model (TAM) is one of the most widely used models (Dauda and Lee, 2015; Shaikh and Karjaluoto, 2015). This model included two specific beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). Perceived Usefulness refers to an individual's subjective opinion regarding the likelihood that the usage of a certain product will be useful, Perceived Ease of Use measures the degree to which potential customers expect the target system to be effortless (Davis, 1989).

It is necessary to determine the most suitable theory and model of technology to explain the factors influences the accepting and using mobile shopping. As mentioned before, there are several theories of technology acceptance including TRA, TPB, SCT, IDT, and TAM. TRA does not address some variables like hedonic motivation, habit and price value, in addition previous theories didn't address the incorporate moderation factors like age, experience, and gender, which has not been addressed for recognizing and identifying differences between individuals. To address the limitations in the previous theories, Extended unified theory of acceptance and use of technology was accepted. The UTAUT2 sample is a more extensive model that describes the adoption of new technology (Yang and Forney, 2013; Vinnik, 2017) and the variance in accepting and using information explains up to 70% of the variance, which is much more than that interpreted by any other models of technology acceptance.

Vekintash et al., 2012 recommended the importance of applying the model on countries that are less technologically advanced in terms of various technological applications. So, this study was adopted on Libya. Libya is one of the countries that least technologically than advanced countries compared to the countries to which the model was applied. Where GSMA report (2020) indicated that the percentage of online shoppers as a percentage of Internet users in Libya reached 23%, which is considered a weak number according to the report, but the Internet penetration rate in Libya reached 84%, which is the second highest rate among the Arab countries in North Africa (after Tunisia) according to the report.

Several previous studies were conducted that dealt with the issue of technology adoption in Arab countries and North Africa, for example, Ameen, and Shah, (2018) conducted study on mobile phone adopters in both UAE and Jordan, where the target sample reached 900 responses from both countries. The study concluded that Arab women in the UAE and Jordan were found to be significantly affected by national IT development, enjoyment, perceived relative advantage, price value and effort expectancy. In addition, Bendary, and Al-Sahouly, (2018) stated in their study regarding mobile commerce on a sample of the Egyptian community that Hedonic motivation and convenience were fully mediated by social influence. Convenience is a factor that tends to impact consumer perceptions of usefulness and ease of use. It has a strong mediation effect between social influences and user perceptions of mobile commerce. Moreover, in the Qasem 2018 study in which Morocco, Tunisia, Bahrain, Jordan, Kuwait, Lebanon, and Oman were compared to the adoption of the E-Ticketing system according to the UTAUT 2 model, this study emphasizes the considerable relationship between the four independent variables of the theory which are performance expectation, effort expectation, social influence, and facilitating conditions on intention.

The majority of previous studies related to the acceptance of mobile technology were not related to the adoption of mobile shopping, other than the study of Singh, Alryalat, Alzubi, and Sarma, (2017) which was conducted on a sample of the Jordanian community to measure Jordan Online Purchase Intentions, as there was a dearth of studies related to Mobile shopping, especially in North Africa in general and Libya in particular, that dealt with the adoption of mobile shopping using theoretical models related to technology in Libya.

Financial risks and performance risks are the risks most affecting consumers when making an online purchase decision (Maignan and Lukas, 1997; Forsythe et al., 2006). performance risk refers to the consumer's concern about the product quality, performance, falseness of a product and product related problem. (Horton, 1984). Financial risks refer to consumer's concern about monetary loss while shopping through the internet (Fram and Grady, 1997). while Time risk refer to the time required in internet shopping, where shopper takes the lost time in relation to the delivery of the product into consideration, whether in late delivery, delivery to the wrong address or non-delivery, or problems dealing with electronic stores online in terms of downloading. Kumar and Khurana (2019) in their study of Exploring the influence of demographic factors on perceived performance risk among youth towards online shopping in Punjab conducted online shoppers of universities of four cities Ludhiana, Jalandhar, Patiala and Amritsar of Punjab indicated that performance risk was found as prime component of perceived risk.

Trust variable, which will added as a sensitive variable to perceived risks (Kesharwani and Bisht, 2012). where it is heavily influenced in adopt technology due the risks (Alalwan et al., 2015; Hanafizadeh et al., 2014), and is useful to understand the direction of risks (Yang et al. 2015) with possession convenience and post possession convenience. Where possession convenience refers to the ease and speed at which a consumer will be able to obtain a desired product (Seiders et al., 2000, p. 85). By focusing on the costs, time, and difficulties associated with buying a particular product on a particular channel (Bhatnagar and Ratchford, 2004), consumers can shop for and inspect a product online and in physical stores, then place orders and complete their shopping. It can be considered a non-cash cost associated with mobile shopping to complete all steps in the online purchasing and delivery process (Beauchamp and Ponder, 2010). Post-Purchase Convenience, this factor refers to services offered after purchase, i.e., after purchasing the products, the customers need after-sales services such as refunds and products maintenance, and ongoing security such as the protection of their personal information (Kaura, Durga, and Sharma, 2015).

According to above, this study proposes a model that combines the elements UTAUT2 (performance expectancy, effort expectancy, social influence, facilitating conditions hedonic motivation, price value, and habit). In addition to perceived risk variables (financial, performance and time risks), thrust, purchase convenience and post purchase

convenience, moreover it will be using moderation factors which that are age and income that affect in accepting and using mobile shopping by depending on shopping apps and shopping through internet browsers. In addition to all those variables (performance expectancy, effort expectancy, social influence, facilitating conditions hedonic motivation, price value, and habit, financial, performance and time risks, thrust, purchase convenience and post purchase convenience), age and income will be tested as moderator variables.

The explanations above led to the following questions as the research problem:

1- Do the identified factors in the model affect the behavior intention of mobile shopping to buy small home appliances by Libyan shoppers?
2- Do the identified factors in model interact with demographic factors on behavior intention of mobile shopping to buy small home appliances by Libyan shoppers?

1.3 The Importance of the Study

This study is important in terms of being one of the first studies that will be applied on Libya to measure behavior intention of mobile shopping by applying the study model with new variables. In additional, the importance of the study is demonstrated by contributing to a better understanding of the factors that influence the behavior of Libyan shoppers when they do mobile shopping. Moreover, this study is significant in providing information on factors affecting mobile shopping to merchants interested in mobile shopping.

1.4 Research Aims

The current study aims to achieve the following objectives:

1- To test the proposed model of UTAUT2 with addition variables on behavior intention of mobile shopping.
2- To explore the influence of the shopper's characteristics on behavior intention of mobile shopping to buy small home appliances.

1.5 Limitations

The current research faced some challenges, the distribution and collection of data was one of the most important obstacles faced by the researcher. In addition to the

sampling method used, it limits the generalizability of the results of the current study to all online mobile shoppers in cities and regions in Libya. This study focused on behavior intention of mobile shopping only using apps, excluding shopping through social media of all kinds. The process of customizing small household appliances may limit or focus results on other products. Perhaps if another type of product is targeted it may limit the results of this study, for example clothing, food or other products.

1.6 Definitions

In this table, the definitions of the concepts are given as accepted in this study.

Table 1.1. *The constructs definitions*

Constructs	Definitions	References
UTAUT2	Refers to the model that concerned with analyzing and understanding the factors that influence behavior intention of mobile shopping to purchase small home appliances.	(Vekintash et al., 2012)
Performance Expectancy	level of confidence that mobile shopping will benefit on shoppers' performance.	(Vekintash et al., 2012)
Effort expectancy	The ability to use mobile shopping to purchase small appliances.	(Vekintash et al., 2012)
Social influence:	In what degree shopper believe that the close friends and family members should purchase small appliances via mobile devices.	(Vekintash et al., 2012)
Facilitating conditions	Meaning that the shopper believes that an environment and effective system is in place to support the purchase of small home appliances through mobile shopping.	(Vekintash et al., 2012)
Price Value	Shoppers' trade-off between mobile shopping benefits and the monetary price of using them among shoppers is revealed by their choice between small home appliances and mobile shopping services.	(Vekintash et al., 2012)

Table 1.1. (Continue) *The constructs definitions*

Habit	The degree to which consumers use mobile shopping behaviors to buy small home appliances automatically as a result of learning.	(Vekintash et al., 2012)
Financial risk	Purchasing small home appliances through mobile shopping results in a net loss for shoppers.	of (Masoud, 2013)
Performs risk	Indicates to how well mobile shopping to pay small home appliances that was purchased performs relative to expectations.	DelVecchio et al., (2005)
Time risk	It refers to lack of accessibility and/or difficulty in submitting orders which led to loss time, when purchasing small home appliances by shoppers via mobile devices.	of (Masoud, 2013)
Trust	According to positive expectations of shoppers' intentions or behaviors, it is a psychological condition that involves the intention to accept mobile shopping to buy small home appliances.	Vekentash et al., (2005)
Possession Convenience	Shoppers can obtain and access products quickly and easily.	(Mahapatra, 2017)
Post-purchase convenience	Are the after-sales services that the shopper obtains after purchasing the products, such as refunding and subsequent security, such as protecting his personal information.	(Mahapatra, 2017)

Chapter 2: LITERATURE REVIEW

In this part, the concept of shopping will be discussed and some theories related to technology will be clarified, in addition to other variables related to the study.

2.1 Shopping Concept

Shopping is an activity, which can be defined as a persistent motivational tendency to engage in the search and/or purchase of products and services (Berdagadaa et al., 1995). Shopping is also defined as "a consumer activity", in which consumers participate depending on their preferences and the context of their purchase (Bäckström, 2011). Bäckström (2006) showed that researchers and academics are increasingly interested in researching shopping. In the shopping literature, Bäckström divides the concept of shopping into two parts: economy shopping (convenience shopping) and leisure shopping. Based on the economic shopping perspective, consumers are not interested in the shopping activity and do not have a neutral stance against economic shopping. However, the primary benefit of economy shopping is to save time or save money. Leisure shopping refers to a consumer's interest in leisure activity, also referred to as a 'leisure activity' (Bäckström, 2006). Bäckström (2011) likens and divides leisure shopping into three categories that focus on topics that affect consumers and their practices: shopping as hunting, shopping, and exploration, and shopping as socializing. Subsequently, shopping attracted further interest in the research fields with an emphasis on a range of different motives and concepts (Bäckström, 2011).

At the time of the emergence of the Internet and rapid technological developments that include smartphones, other types of shopping have emerged apart from the traditional acceptable traditional shopping, i.e., it has become a form of entertainment shopping. The following are the different types of shopping.

2.1.1 Offline Shopping

Offline shopping, or traditional shopping, is a social activity that involves face-to-face interactions with customers (Everts and Jackson, 2009; Pantano and Gandin, 2017). Traditional shopping takes place in a face-to-face environment with sellers, where sellers have the opportunity to learn more information about customers (Frow and Payne, 2007). Such information enables the analysis of the customers' experiences with different products and generates personalized recommendations. Moreover, the variety of products

available for sale is usually limited, and the retailer can limit the time and process of selling (Frow and Payne, 2007).

2.1.2 Online Shopping

Customers' reactions to direct or indirect contact with online shopping are defined as online shopping (Grewal et al., 2009). Online shopping is also defined as searching for products or services, comparing prices, etc. using the internet, but does not necessarily conclude with an actual purchase (Reynolds, 2000). Customers have the option to shop online using a range of devices including desktop computers, laptops, tablets, and smartphones (Kumar and Khurana, 2019). Depending on the user's tool, online shopping is divided into two types: computer-based shopping and mobile shopping.

2.1.3 Online Shopping Using Computer

Shopping using personal computers (and laptops) to make online transactions is a type of online shopping through the use of web browsers such as Google Chrome, Opera, Microsoft Edge, etc. Customers can choose and purchase goods and services directly from the seller or through downloadable applications. However, the process of shopping and actual purchasing via computers is relatively restricted in terms of mobility, especially when shopping through desktop computers.

2.1.4 Online Shopping Using a Mobile Phone

Online shopping is a type of shopping that facilitates the purchasing of products and services using a mobile device connected (wirelessly) to the internet. Ko et al. (2009) defined mobile shopping as “activities conducted via a mobile phone by a consumer for shopping and purchasing using wireless internet service.” In the past years, mobile phones have evolved into smartphones with various functionality, large screens, and which provide stable and unlimited access to the internet. Mobile phones are operated using a mobile computing platform with advanced computing and communication capabilities compared to the previous basic mobile phones. Current smartphones include devices running on (regularly updated) operating systems, such as iOS, Android, Windows Phone, Symbian, Blackberry OS, and others (Idean, 2013).

Various attempts by researchers have been undertaken to classify mobile commerce services. Barutçu (2007) summarized mobile commerce services via several applications including multimedia mail, mobile phones as portable entertainment devices, mobile marketing, mobile shopping, mobile navigation, and mobile intranets. Since mobile shopping is one of the seven important applications related to mobile commerce services, Barutçu (2007) classified mobile shipping using a different functional classification as it is considered among the most exciting function to expand customers' shopping options along with other functions, which are: mobile advertising, mobile sales promotion, mobile entertainment services, location-based mobile services, and mobile banking, where mobile phone users can connect to the Internet and do any of these functions, in addition to buying anything they need or want.

On the other hand, Fuentes and Svingstedt (2017) divided mobile shopping activities into six types:

1. Window shopping: Consumers often pick up the phone and use the web browser to make selections and view items from stores as a window through which they can interact with other consumers or shoppers. There is also evidence that the perceived satisfaction from window shopping has a greater effect on consumer motivation than the actual perceived benefits (Fuentes and Svingstedt 2017).
2. Seeking inspiration and staying up-to-date (shopping for ideas): Search marketing entails gathering information and ideas regarding general trends in marketing and fashion to engage in a fun activity that may be a part of a bigger whole.
3. Searching, purchasing, and discovering products: The use of mobile devices to conduct searches for services and products is becoming more targeted. Rationality and utilitarianism are often associated with these types of searches.
4. Reading product reviews and comparing prices: Product reviews are critical to consumers. In terms of the added value, this service helps reduce the complexity of the search process for the customer and thus motivates the consumer to purchase due to the filtering of the overwhelming information about products and services in today's markets.
5. Mobile phones and stores: localizing, socializing, and bargain hunting. Additionally, mobile shopping can be a social activity as consumers normally tend to visit physical markets while evaluating the displayed products using their mobile

devices via online search before making the purchasing decision on the spot or closely afterward.

6. Managing expenses, transferring funds, and mobile payments: mobile phones may be used to pay for the products purchased online or offline from the store. Moreover, by giving customers access to their financial information in real-time, customers tend to feel more secure, confident, and in control.

2.2 Elements of Mobile Shopping

Incorporating mobile into the shopping process is partly introducing a new set of skills and concepts the consumer benefits from upon utilizing them (Fuentes and Svingstedt, 2017). The role of mobile phones is not limited to the repositioning of the activities related to shopping but also the repositioning of items related to the shopping activity as well. Hence, several mobile shopping can be identified:

a) Mobilizing new competencies, which are of two types: shopping and technology. Mobile shopping efficiency is related to the learning and understanding of the retail mechanism and the means of shopping, reading blogs, and downloadable apps, utilizing them, rating products and services, etc.
b) Technical competence, relates to the way mobile phones are used, how to deal with them in support of business structures and information technology systems, and the capabilities and technologies available within devices that are provided to consumers (Fuentes and Svingstedt, 2017).

2.3 Characteristics of Mobile Shopping

Mobile shopping has some distinguishing characteristics. For example, mobile shopping is time-saving for the customer and eases the geographical barriers since the process of purchasing a product or service via a mobile phone can be conducted in a relatively short time without having to go home (Haertfelder and Winkelmann, 2016). A mobile device includes a special application store through which applications can be downloaded and shopping could be carried out, making it seem easy to access from anywhere at any time. (Dinsmore et al., 2017). A mobile device has a smaller screen than that of a desktop device and thus provides less space for displaying information. Considering the small area of the mobile phone screen, this implies that the customer might face more difficulty reading long texts (Cabanillas, et al., 2017). Mobile devices are very

individualistic and this affects the customer's shopping behavior, this means that mobile shopping is more diverse and flexible in use (Cabanillas, et al., 2017). There is a growing tendency to purchase and pay for goods and services in e-commerce via mobile devices (Hong et al., 2012).

Furthermore, the use of mobile devices helps retailers communicate with their customers and increase sales (Yang and Kim, 2012). According to Chen et al. (2007), services based on mobile proxies can be more efficient than traditional web services. A wireless internet connection makes mobile shopping more flexible and desirable; it also motivates people to opt for it. Therefore, smartphones can provide an active service that contributes to the formation of consumer agency (Guthrie, 2013).

2.4 Theories behind Behaviour intention of mobile shopping

In technology-related management and marketing research, the theoretical foundations of previous studies are laid through technology models, and the application of these models varies based on the research perspectives. These models have been utilized in administrative, financial, and marketing sciences. For example, theoretical models related to technology have been used to examine the behavior of banking applications. Such models have also been used by marketing scholars in the marketing side to understand the behavior of technology users, of which shopping is one part of it. To explain the models and factors that affect the intention and use of technology, a set of related theories and models are listed below.

2.4.1 Theory of Reasoned Action

To better understand the relationships between attitudes, intentions, and behaviors, Ajzen and Fishbein (1975) introduced the Theory of Reasoned Action (TRA). Many previous studies that examined these relationships found a relatively weak correlation between attitudes and behaviors. Consequently, Ajzen and Fishbein (1975) developed the TRA to distinguish between attitudes towards a particular object (an entity) and attitudes towards behavior. The researchers concluded that an individual's attitude toward a behavior is the best way to predict that behavior.

The theory consists of three general structures: attitude, behavioural intention, and subjective norm. According to this theory, the consumer's behavior is influenced by his

intention to engage in the behavior, which is the result of his attitude toward the behavior and the subjective standards, hence, it is critical to measure the subjective criteria that influence his intention to engage in that specific behavior. Norms, as defined by Ajzen (1987), include an individual's perception of what other people think about an individual's behavior, as well as that individual's motive to conform to the expectations of others (Ajzen, 1987).

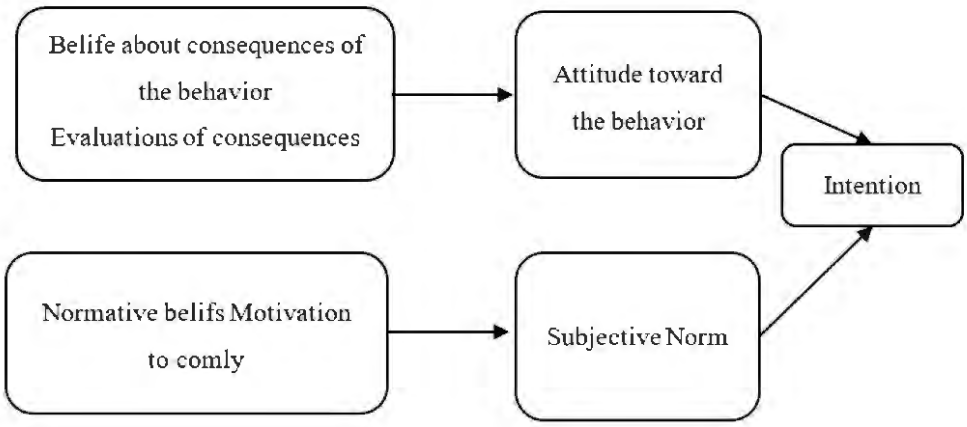


Figure 2.1 *Theory of Reasoned Action*

Source*:* Fishbein, M., & Ajen, I. (1975). Belief, Attitude, Intention, and Behaviors: An Introduction to Theory and Research. Boston, MA: Adison, p (334).

2.4.2 Diffusion of Innovation Theory

Founded by Rogers (1983, 1995), the Diffusion of Innovation Theory (DOI) is among the theories that explain human behavior in terms of the tendency to adopt innovations and new ideas. This theory focuses on the dissemination of information related to innovations across members of society, or one of its segments, to achieve development. Innovation, according to this theory, is any new idea, style, or pattern that is used in life.

Rogers' theory focused on four major components of contributing to society: innovation, communication channels, time, and the social system whereby Rogers showed that the dissemination of innovations passes through five stages upon decision making, and such decisions take place in a series of communication channels at intervals of time between a group of units in a similar social system, namely: knowledge, conviction, decision-making, application, confirmation.

2.4.3 Theory of Planned Behavior

The Theory of Planned Behavior (TPB) is an extension of the widely used TRA (Ajzen and Fishbein, 1980). TPB identifies the factors that determine an individual's decision to pursue a particular behavior. Based on the TPB, characteristics that determine behavior, or determinants that affect behavior, aim to control that behavior. The individual's intentions represent his or her desire to perform the behavior. An individual's perception of behavioral control pertains to the belief that he or she can control behavior.

Ajzen (1991) explained that intention is influenced by three factors: attitudes, which represent an individual's overall assessment of the behavior; subjective norms, which are their beliefs about others, and whether others think they should engage in the behavior or not; and perceived behavioral control, which is how easy or difficult it seems to the individual to perform the behavior. Each component of subjective attitudes and norms as well as components of perceived behavioral control also have antecedents. Attitude is a function of beliefs regarding the perceived consequences of a behavior that based upon two factors: the probability that an outcome will occur after performing the behavior and the evaluation of the outcome. As a function of normative values, which are beliefs about specific significant others' preferences about what behavior should or should not be engaged in (Norman and Conner, 2005), the subjective norm is derived from normative beliefs.

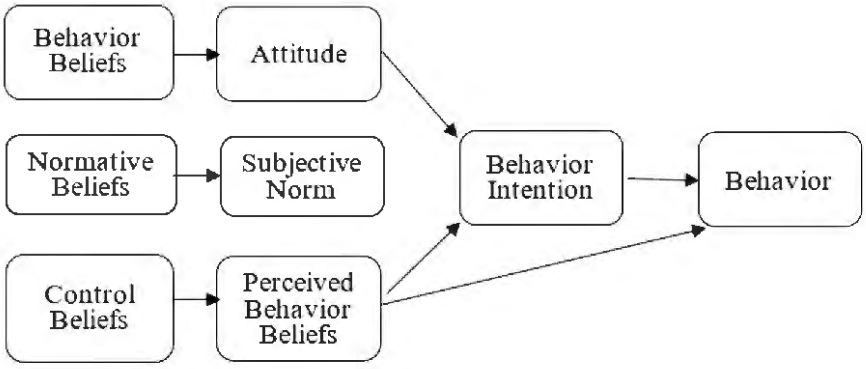


Figure 2.2. *Theory of Planned Behavior*

Source: Mathieson, K. (1991). Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. *Information systems research*, *2*(3), 173-191.

2.4.4 Social Cognitive Theory

Bandura (1986) developed his theory entitled "Social foundations of thought and action; a social cognitive theory" as an attempt to distinguish cognitive theory from mainstream approaches to social learning. To move away from mainstream social learning theories, Bandura based his concept on the view that cognition plays a crucial role in people's ability to construct reality, encode information, self-regulate, and perform the behavior.

As known from the Personal Construct Theory, an individual's interpretation of the outcomes of their behavior shapes what informs the environment in which they live and the personal factors they possess that determine the resulting actions they take. Based on the PCT perspective, it is argued that human performance can be considered the product of a dynamic interaction between personal factors and behavioral and environmental stimulants.

For technological innovations to be adopted, people must be able to learn and adjust to a myriad of new factors. The Personal Construct Theory offers a unique way of examining which of these factors is most influential in explaining how this is achieved. Ratten (2008) applied social cognitive theory in the context of e-commerce, which incorporated both internal and external factors (Ratten, 2008). Ratten (2013) indicated that the results of using social cognitive theory as a model for examining how the adoption of mobile banking services support the relationship between media and the entrepreneurial orientation of the individual with the overarching aim of adopting mobile banking services.

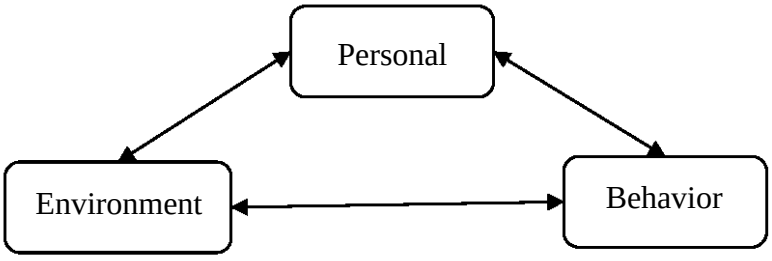


Figure 2.3. *Social Cognitive Theory*

Source: Schunk, D. H. (1989). Social cognitive theory and self-regulated learning. In *Self-regulated learning and academic achievement* (pp. 83-110). Springer, New York, NY

2.4.5 Technology Acceptance Model (TAM)

It has been recognized that the Technology Acceptance Model (TAM) derives from Fishbein and Ajzen's (1979, 1980), Ajzen's Planned Behavior theory (1991, 1996), Reasonable Action, and Planned Behavior (TRA). Using this theory to explain the relationship between perceived usefulness, perceived ease of use, user attitudes, and actual behavior, Davis (1989) developed this theory and attempted to validate it using better predictive measures to better explain its uses, which yielded to constructs: Perceived utility and usability as primary determinants of system use.

Perceived usefulness is defined by Davis as "the degree to which an individual believes that the use of a particular system improves his performance" (Davis, 1989). Davis further categorized it into three groups: productivity, time savings, and the importance of the system to an individual's job. Perceived ease of use refers to "the degree to which an individual believes that using a particular system will not entail additional effort" (Davis, 1989). Davis then divided perceived ease of use into three separate categories. Individuals belonging to specific groups define the ease of use in terms of mental and physical effort and their expectations of ease of use of the system. This model has been validated and extended by other researchers (Szajna, 1996; Hu et al., 1999; Lederer et al., 2000; King et al., 2006; Fathema et al., 2015), the informaton systems research community has gone further with it.

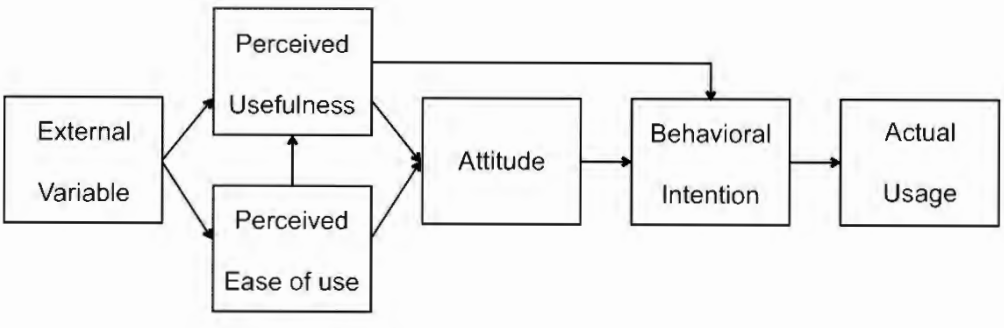


Figure 2.4. *Technology Acceptance Model (TAM)*

Source: Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management science*, *35*(8), 982-1003.

2.4.6 Extended Technology Acceptance Model

It was suggested that new variables should be added to the TAM to make the model even more reliable (Legris et al., 2003). In essence, the Extended Technology Acceptance Model (TAM2) is an updated version of the TAM by Davis and Venkatesh (2000). TAM2 does not include the component ‘attitude towards use’ but adds a new variable called 'subject norm' to capture the social pressure which compels users to adopt new technology.

Result demonstrability and perceived ease of use relate to cognitive instrumental processes that relate to job fit and quality of output, while social impact processes require subjective norm, voluntarism, and an image. Social impact and cognitive automated processes are also key determinants of perceived benefit and intentions of use.

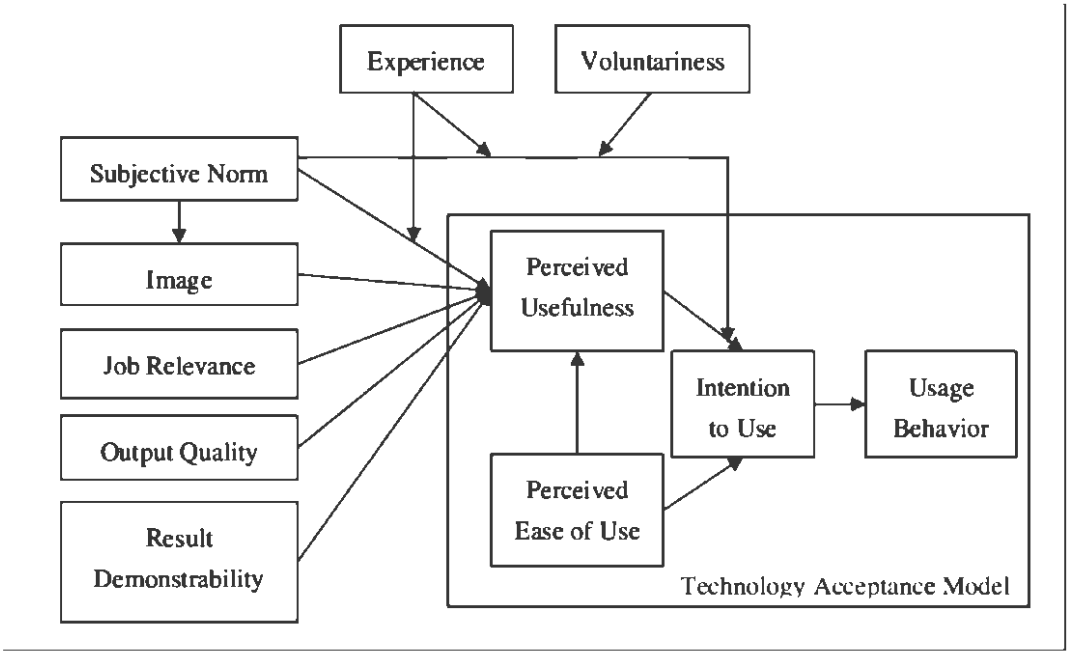


Figure 2.5. *Extended Technology Acceptance Model*

Source: Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, *46*(2), 186-204

2.4.7 Model of Personal Computer Utilization

In many ways, the Model of Personal Computer Utilization (MPCU) is similar to TRA. Fahmy proposed a model to predict how people will use computers. Complexity, social factors, functional suitability, facilitating conditions, influence toward use, and long-term consequences are combinations that predict it in this model.

A complex view of innovation refers to the belief that it is difficult to interpret and use while job suitability can also be defined as how much reliance people have on technology in their jobs as a means of improving job performance. Social factors are people's assimilation of the subjective culture produced by the reference group, and the specific personal agreements that people make with others in specific and different social situations. A facilitating condition is a set of factors in the environment that make it easier to do work. Long-term consequences are the results from which a return can be obtained in the future. According to Thompson et al. (1991), affect toward use can be described as a emotion, such as joy, excitement, pleasure, depression, disgust, resentment, or hatred towards a person associated with a particular action (Thompson et al., 1991).

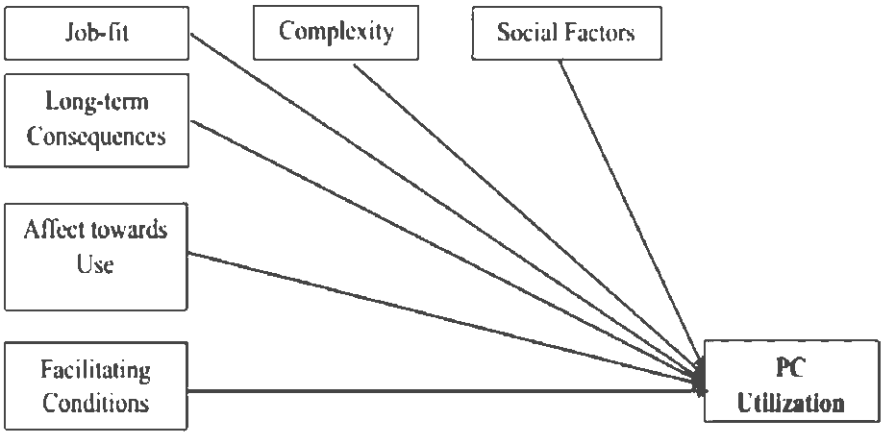
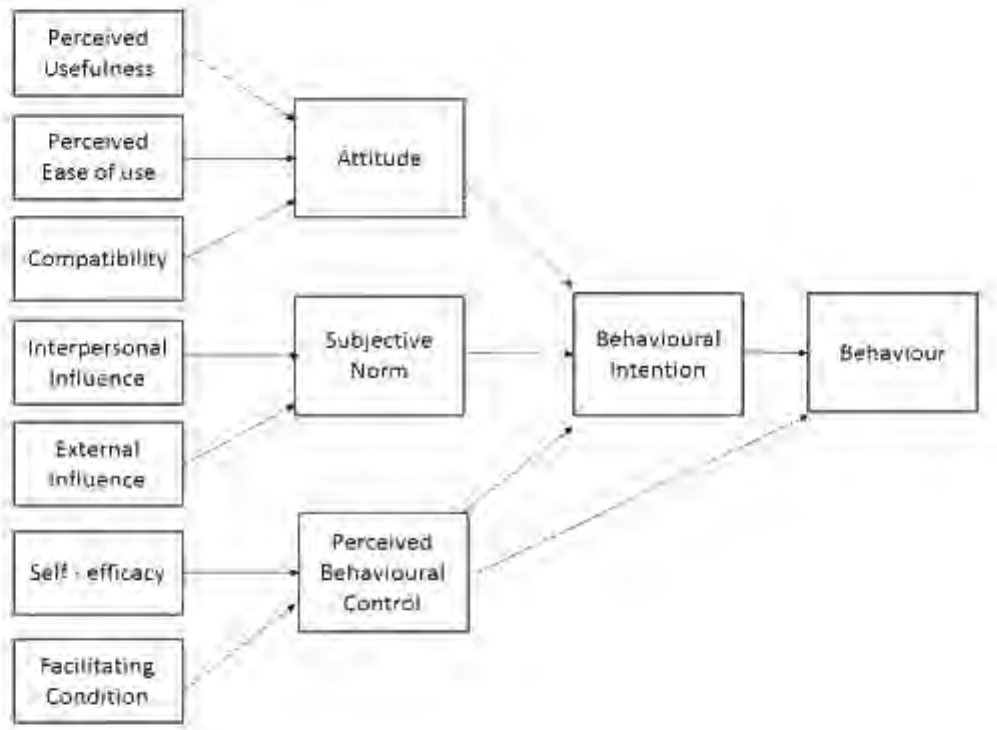


Figure 2.6. *Model of Personal Computer Utilization*

Source: Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. *MIS quarterly*, 125-143

2.4.8 Decomposed Theory of Planned Behavior

The Decomposed Theory of Planned Behavior (DTPB) was formulated by Taylor and Todd (1995b), it equally explores the dimensions of attitude, belief, and subjective norms, as well as perceived behavioral control, through which the dimensions of the situation are analyzed into specific belief dimensions. On the other hand, Behavioral intention was denoted as the primary direct determinant of behavior by Taylor and Todd (1995b).



7 **Figure 2.7.** *Decomposed Theory of Planned Behavior*

Source: Taylor, S., & Todd, P. (1995). Decomposition and crossover effects in the theory of planned behavior: A study of consumer adoption intentions. *International journal of research in marketing*, *12*(2), 137-155

2.4.9 Motivational Theories

A group of researchers have used motivational models to study the adoption and use of new technology (Venkatesh and Speier, 1999). Humans are evolutionarily programmed to behave a certain way in response to these influences (Vallerand, 1997).

In motivational theories, the rationale behind the behavior is explained by the extrinsic or intrinsic motivation. The need for achievement (N-Ach) refers to users continuing to perform an activity despite apparent reinforcement other than during the act itself (1992). Improvement in job performance, salary, or promotions result from extrinsic motivation, which relates to the perception that users will be motivated to do a specific activity because it is seen as beneficial in achieving valuable outcomes different from the activity itself (Davis et al., 1992).

2.4.10 Unified Theory of Acceptance and Use of Technology

In 2003, Venkatesh and colleagues reviewed eight prominent models and theories, they formulated a unified model integrating elements from each model and empirically validating it. The eight original models and theories of individual acceptance formulated by Venkatesh et al. (2003) were the Theory of Reasoned Action, the Technology Acceptance Model, the Motivational Model, the Theory of Planned Behavior, the model combining Technology Acceptance Models, the Theories of Planned Behaviors, the Model of PC Utilization, Innovation Diffusion Theory, and Social Cognitive Theory.

As a result, a direct relationship exists between three determinants of intention to use (performance expectancy, effort expectancy, and social influence) and two direct relationships between determinants of usage behavior (intention and facilitating conditions). The components of the unified theory are:

- A person's "performance expectancy" is "how much he or she believes that using a system can improve the quality of his or her performance, such as mobile services, as valuable in achieving their career goals".
- An individual's effort expectancy is the measure of how much they feel comfortable and find it easy to adopt and employ the system in their day-to-day jobs. Social influence is a way to measure "the extent to which a person believes that others who care about him/her believe that he/she should use the system".
- According to this measurement, facilitating conditions refer to "whether people are convinced that organizational support will make it easier for them to use the system".

- As well as age, gender, experience, and voluntariness of usage, UTAUT calculates the moderating effect of those factors mentioned above (Venkatesh et al., 2003).

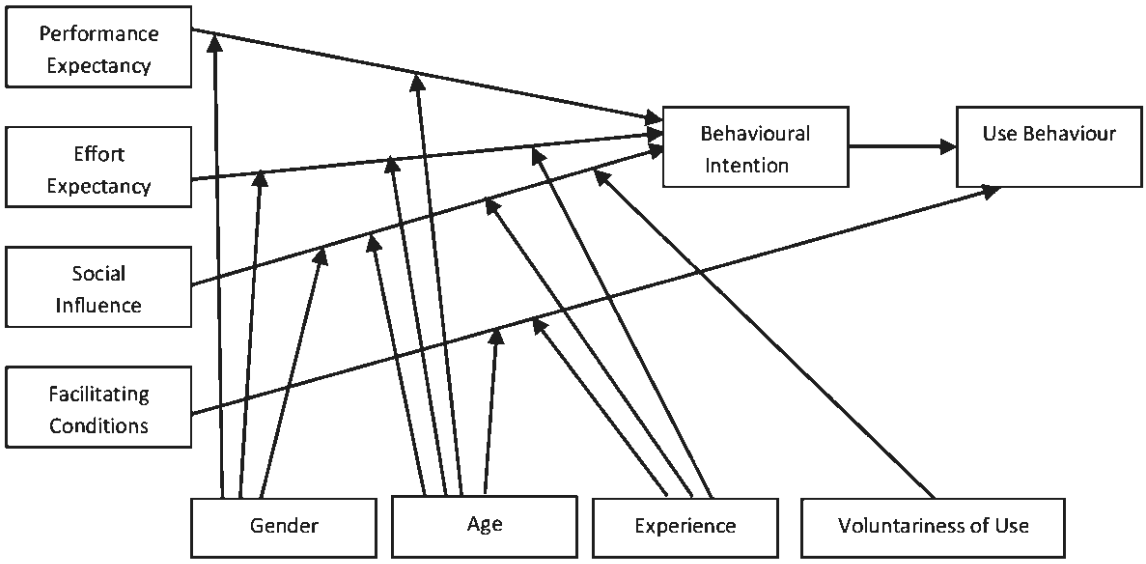


Figure 2.8. *Unified Theory of Acceptance and Use of Technology*

Source: Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478

2.4.11 Extended Unified Theory of Acceptance and Use of Technology

Venkatesh et al. (2012) used the Unified Theory of Acceptance and Use of Technology (UTAUT) to study technology acceptance and its usage in the consumer context, they extended their theory as a result. UTAUT2 is the result of their work culminating in an extended framework. UTAUT includes three constructs:

- *Hedonic Motivation*: based on an expectation of pleasure gained from the use of technology.
- *The* consumers' trade-off between perceived benefit and monetary cost is represented by the *price value*.
- A *habit* is a way in which a person tends to perform a behavior automatically due to their past experiences.

Specifically, the hypothesis suggests that differences in individual characteristics such as age, gender, and experience would moderate the impact of these constructs on

behavioral intention and technological use. Compared to UTAUT2's extensions, the behavioral intention variance explained in UTAUT2's extensions increased by 56% to 74%,, i.e., the ability of the independent variables to explain the dependent variable increased to 74% from 52%.

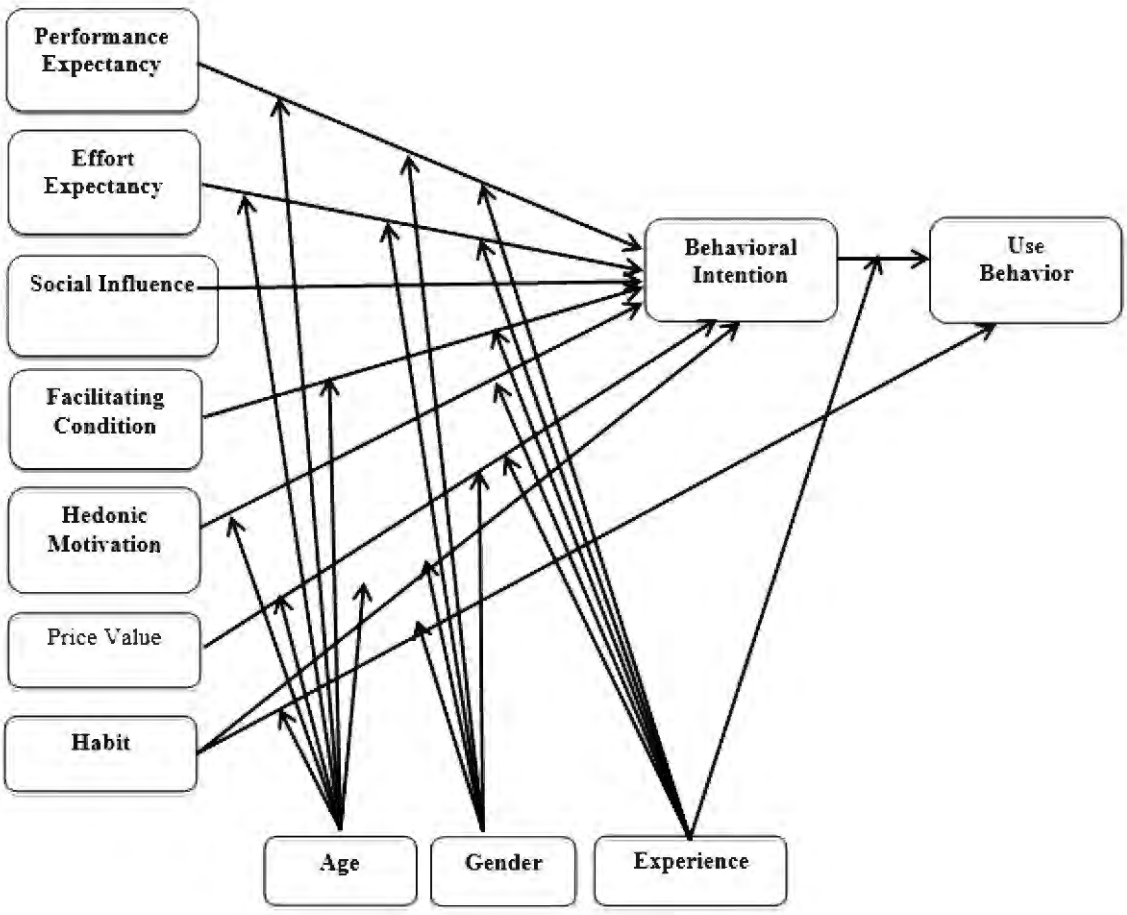


Figure 2.9.. *Extended Unified Theory of Acceptance and Use of Technology*

Source: Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.

It appears that the UTAUT1 model has been widely used across different studies and across various user groups based on the literature (Raman et al., 2013; Yuan et al., 2015; Alalwan et al., 2017; Shaw et al., 2019). Despite that, UTAUT2's add-ons indicate that no single research model is entirely applicable across different technological and organizational environments (Venkatesh et al., 2012).

Table 2.1. *Summary of all the variables factors that have been used in the theories of technology acceptance models*

Theory	TRA	SCT	TAM	TPB	MPCU	DTPB	IDT	TAM2	M. Theories	UTAUT	UTAUT2
Author	Ajzen and Fishbein	Bandura	Davis	Fishbein and Ajzen	Thompson et al.	Taylor and Todd	Rogers	Venkatesh and Davis	Davis et al.	Venkatesh et al	Venkatesh et al
Year	1975	1986	1989	2010	1991	1995b	1983	2000	1992	2003	2012
	Outcome Evaluations	Environment	Perceived Usefulness	Subjective Norms	Long-term Consequences	Perceived Ease of Use	Complexity	Image	Like a perceived usefulness	Effort expectancy	Effort expectancy
	Attitude	Behavior	Perceived Ease of Use	Perceived Behavioral Control	Complexity of PC Use	Compatibility	Triability	Job Relevance	Intrinsic motivation	Social Influence	Social Influence
	Motivation to Comply		Intentions to Use	Behavior	Facilitating Conditions	Interpersonal influence	Compatibility	Result Demonstrability		Gender	Hedonic motivation
	Normative Beliefs		Attitude Towards Use	Intention	Affect Towards Use	Attitude	Observability	Output Quality	Like a perceived enjoyment	Facilitating Conditions	Facilitating Conditions
	Behavior Beliefs	Person (self)	External Variables	Attitude	Social Factors	Perceived Usefulness	Relative Advantages	Subjective Norm	Extrinsic motivation.	Performance expectancy	Performance expectancy
	Subjective Norms		Actual Usage		Job-fit	Self-efficacy	Innovation Adoption	Experience		Age	Price value
	Behavioral Intention				PC Utilization	Subjective Norm		Voluntariness		Experiences	Habit
	Behavioral					Self-efficacy		Perceived Usefulness		Voluntaries	Gender
						Facilitating Conditions		Perceived Ease of Use		Behavioral Intention	Age
						Perceived Behavioral Control		Intention to Use		Use Behavior	Experiences
						Behavioral Intention		Usage Behavior			Voluntaries
						Behavioral					Behavioral Intention
											Use Behavior

The theories listed in the table 2.1 contain different variables and influences among each other to explain the acceptance technology, where that most of them are consistent in specifying the dependent variable, which is behavior. On top of that, UTAUT2 and UTAUT include a moderation factor of age, experience, and gender in their test, which enables the identification and characterization of individual differences between users.

2.5 Perceived risk

New technologies are easier to use and more useful when perceived risk is low. Technology acceptance is hindered by perceived risks (Chen and Lee, 2012). The perceived risks associated with technology use of the services extend beyond surfing the Internet, leading to a lack of confidence in the technology itself represented by basic technologies and situational risks (Wolf, Kuber and Aviv, 2018). Based on some findings that are dependent on the context of knowledge (Campbell and Goodstein, 2001), the risk construct contains many components in the conceptual framework, according to that many studies have indicated many types of perceived risks, such as financial, performance, time, social, security, information, privacy etc. and the following table shows the types of e-commerce risks that have been identified by the researcher.

Table 2.2. *Kind of Risks*

Kind of Risk	Researchers
Performance risk	Roselius (1971), Grewal et al. (1994), Bhatnagar et al. (2000), Grewal et al. (1994), Biswas and Biswas (2004), Ko et al. (2004), Huang et al/ (2006), Hassan et al. (2006), Forsythe et al. (2006), Boksberger et al. (2007), Maxwell et al. (2009), Alda´s-Manzano et al. (2009), Lowe (2010), Almousa1 (2011), Nepomuceno et al. (2012), Chang and Tseng (2013), Thakur et al. (2013), Nepomuceno et al. (2014), Brack and Benkenstein (2014), Marriott and Williams (2018), Kumar and Bajaj (2019).

Table 2.2. (Continue) Kind of Risks

Financial risk	Makhitha and Ngobeni (2021), Qalati and et al. (2021), Tham et al. (2019), Banerjee and Vidyasagar (2021), Yang et al. (2015), Marriott and Williams (2018), Almousa1 (2011), Nepomuceno et al. (2012), Chang and Tseng (2013), Nepomuceno et al. (2014), Hassan et al. (2006), Forsythe et al. (2006), Boksberger et al. (2007), Roselius (1971), Grewal et al. (1994), Mitchell (1999), Miyazaki and Fernandez (2005), Biswas and Biswas (2004), Ko et al. (2004).
Social risk	Ko et al. (2004), Alda´s-Manzano et al. (2009), Almousa1 (2011), Chang and Tseng (2013), Thakur et al. (2013), Boksberger et al. (2007), Yang et al. (2015), Kumar and Bajaj (2019), Qalati et al. (2021), Makhitha and Ngobeni (2021), Huang et al. (2006), Nepomuceno et al. (2012).
Time risk	Roselius (1971), McCorkle (1990), Hassan et al. (2006), Alda´s-Manzano et al. (2009), Almousa1 (2011), Nepomuceno et al. (2012), Forsythe et al. (2006), Zhang et al. (2012), Ko et al. (2004), Chang and Tseng (2013), Thakur et al. (2013), Nepomuceno et al. (2014), Yang et al. (2015), Marriott and Williams (2018), Kumar and Bajaj (2019), Qalati et al. (2021), Makhitha and Ngobeni (2021).
Privacy risk	Miyazaki and Fernandez (2005), Almousa1 (2011), Chang and Tseng (2013), Thakur et al. (2013), Masoud (2013), Alda´s-Manzano et al. (2009), Nepomuceno et al. (2014), Kumar and Bajaj (2019).
Psychological risk	Ko et al. (2004), Huang et al/ (2006), Hassan et al. (2006), Boksberger et al. (2007), Almousa1 (2011), Nepomuceno et al. (2012), Chang and Tseng (2013), Yang et al. (2015), Marriott and Williams (2018), Kumar and Bajaj (2019).

Table 2.2. (Continue) Kind of Risks

Security risk	Mitchell (1999), Alda´s-Manzano et al. (2009), Thakur et al. (2013), Masoud (2013), Brack and Benkenstein (2014), Qalati et al. (2021).
Physical risk	Huang et al., (2006), Hassan et al. (2006), Boksberger et al. (2007), Ko et al. (2004), Chang and Tseng (2013).
Source risk	Roselius (1971), Mitchell (1999), Hassan et al. (2006), Chang and Tseng (2013).
Information Risk	Makhitha and Ngobeni (2021).
Product knowledge risk	Masoud (2013), Brack and Benkenstein (2014), Brack and Benkenstein (2014), Tham et al. (2019), Banerjee and Vidyasagar (2021), Qalati and et al. (2021), Makhitha and Ngobeni (2021).
Delivery risk	Masoud (2013), Makhitha and Ngobeni (2021).
Convenience risk, Policy risk, Non-Delivery risk	Masoud (2013), Brack and Benkenstein (2014).

According to the 2.2 table, many perceived risks surrounding e-commerce are noted. According to Guru et al. (2020) due to the tremendous acceleration of technological development, and the employment of this development in e-commerce, shoppers have always been weary of the perceived risks. Online shopping involves an increasing number of risks, and because it is difficult to study all of these risks, the focus has been on the highest risks discussed and studied by researchers, and the following table shows the number of studies that dealt with the types of perceived risks according to the researcher's knowledge.

Table 2.3. *Summary of the risks that have been used by authors' papers*

Author(s)	Performance	Financial	Social	Time	Privacy	Psychological	Security	Physical	Source	Information	Product knowledge	Others	Delivery
Roselius (1971)		√		√					√				
McCorkle (1990)				√									
Grewal et al. (1994)	√	√											
Mitchell (1999)		√					√		√				
Bhatnagar et al. (2000)	√	√											
Miyazaki and Fernandez (2005)		√			√								
Biswas and Biswas (2004)	√	√											
Ko et al., (2004)	√	√	√	√		√		√					
Huang et al., (2006)	√	√	√			√		√					
Hassan et al., (2006)	√	√	√	√		√		√	√				
Forsythe et al. (2006)	√	√		√									
Boksberger et al. (2007)	√	√	√			√		√					
Maxwell et al., (2009)	√												
Alda´s-Manzano et al., (2009)	√		√	√	√		√						
Lowe, (2010)	√												
Almousa1, (2011)	√	√	√	√	√	√							
Nepomuceno et al., (2012)	√	√	7	√		√							
Zhang et al., (2012)				√									
Chang and Tseng, (2013)	√	√	√	√	√	√		√	√				
Thakur et al., (2013)	√		√	√	√		√						

Table 2.3. (Continue) Summary of the risks that have been used by authors' papers

Nepomuceno et al., (2014)	√	√		√	√								
Brack and Benkenstein, (2014)	√						√				√		
Ariff et al., (2014)		√									√	Convenience, non-Delivery	
Yang et al., (2015)		√	√	√		√							
Marriott and Williams, (2018)	√	√		√		√							
Kumar and Bajaj, (2019)	√	√	√	√	√	√							
Tham et al., (2019)		√									√		
Banerjee and Vidyasagar, (2021)		√									√		
Qalati and et al., (2021)		√	√	√	√		√				√		
Makhitha and Ngobeni, (2021)					√		√				√	Convenience, Policy, non-Delivery risks	√
Masoud, (2013)		√	√	√					√		√		√

From the previous table 2.3, it is noted that financial risks, performance risks, and time risks are among the most frequently addressed risks by researchers, and this may be due to the importance of these risks, which made researchers focus on them to study. In the following, these three risks will be addressed.

2.5.1 Perceived Performance Risk

The concept of perceived performance risk is defined as an "apprehension about the effectiveness of the communication channel" (Hassan et al., 2006). As defined by Thakur, et al. (2015) “How well a product performs relative to expectations”. Performance risk is influenced by many factors, such as product quality confidence (Hong 2015), information quality, product branding, website design and content. Depending on the service or product being purchased online, the level of performance risk varies. A major limitation of e-retail commerce is the inability of consumers, to physically check or try on products before purchasing. Hence, the item is seen as being unpredictable (Simonian et al., 2012). Therefore, information about the design, appearance, and fit of the product are necessary for the customer to make an informed purchase decision. It is consumers' knowledge and cognition of a particular product area that determines how they evaluate performance risk, in addition, online shoppers are concerned that they will not be able to return or exchange a product if it does not meet their expectations or requirements (Tong, 2010; Littler and Melanthiou, 2006).

2.5.2 Perceived Financial Risk

Risk is the possibility of losing money (Derbaix, 1983). Hassan et al. (2006) state that financial risk refers to the concern about any financial losses associated with online shopping. This indicates that the perceived financial loss is the probability of financial damage, as a result of non-delivery or delivery of defective product. It is for this reason that some sellers may act in an opportunistic manner (Hong, 2015), by misleading purchasers and failing to honour promises made for guarantees (Hong, 2015). Another reason for the higher financial risk associated with online purchasing is the fact that the buyers, in some cases, cannot directly contact the seller of the item in question. In some cases, the risk may intensify due to the lack of seller credibility (Biswas, 2004), which leads to a negative impact of financial risk on behavioural tendencies in different contexts

(Masoud, 2013), Consumers who associate online stores with higher risk are less likely to shop online (Forsythe et al., 2006). In spite of the value that a product offers, a consumer may decide not to purchase it due to the financial risks involved (Harridge-March, 2006).

2.5.3 Perceived Time Risk

Forsythe and Shi, (2003) defended Time risk as inconvenience caused to the user by the shopping process such as extra time or delay in completing the transaction, they explained that time risk takes into account lost time in terms of product delivery, whether late delivery, delivery to the wrong address, or non-delivery.

Several online e-stores are available on the Internet, where consumers can perform transactions and make purchases through these stores, but the waiting time to provide the service or purchase the product through online e-stores negatively affects the service perception of the service product. Customers may believe e-commerce takes a long time (Demoulin and Djelassi, 2013). Even though the internet offers the low cost of obtaining information, consumers may have to spend time shopping online, taking the time to learn more about how to shop on online retail sites and shops, waiting for a response and requiring additional cognitive awareness and effort in this research process (Kunze and Li-Wei, 2007). The downloading, opening and browsing speeds of online stores can also pose a time risk when it comes to online shopping. Experiencing erroneous transactions and the time it takes to rectify them are additional factors that influence online shopping adoption. In the context of downloading, opening, and browsing online stores, people may opt not to wait for service due to the cost of waiting (Janakiraman et al., 2011).

2.6 Trust

Trust is (1) believing that a person or thing is good, sincere, honest, trustworthy, and will not harm or trick you, (2) trust the belief in a certain thing as accurate, true, or dependable, (3) a situation in which someone is given money or property which is legally controlled by an organization or a group of people until the owner reaches a certain age; an amount of money or property managed in this way, (4) an organization or group of people that collects given or lent money and uses the profits to benefit a charity, (5) a

collection of illegally co-located companies working together to reduce competition, control prices, etc (Oxford English Dictionary).

The concept of trust was approached by many researchers. For example, Whitener et al. (1998) define it in three ways. First, trust is based on the belief that another party will act benevolently. Second, one cannot control or force the other party to fulfill this expectation-that is, trust involves a willingness to be vulnerable and risk that the other party may not fulfill that expectation. Third, trust entails some degree of dependency, so that the actions of one individual affect those of another.

Trust is a psychological state in which a person intends to accept vulnerability in the belief that the other person has positive intentions or acts (Rousseau et al. 1998, p. 395). Pruit (1981) held that trust is a prerequisite for the development of mutually beneficial relationships. As a key element of developing interpersonal relationships, trust has been treated by marketing literature. A causal bond between buyer-seller relationships and customer loyalty has been conceptualized as trust (Baggozzi, 1975; Berry and Reichhold, 1994). According to Manag (2015), trust variable means positive behavior to believe that an action has occurred that is consistent with the positive assumptions. It accumulates consumer beliefs about ability, charity, and integrity, which enhances their behavior in the use shopping (Gefen et al., 2003). According to marketers, trust facilitates relationships to change and evolve over time and enhances retail sales by caring for the interests of the customer (Czepiel, 1990).

An 'e-commerce' transaction is an online transaction made between an individual and a business through an online link, such as on a shopping mall website or a web portal. The following six factors was processed to contribute to the formation of online trust according to Cheskin (1999):

- Security assurance: Responsible for installing security symbols, such as VeriSign or Visa, to ensure the security of transactions.
- Brand: Several factors are taken into account to predict a firm's credibility, including its reputation and past web traffic experience.
- Search: Makes it easy for visitors to find what they're looking for
- Fulfillment: Accurately reflects order processing and solves problems when they arise.

- Presentation: Aside from the look and feel, this display indicates quality and technology.
- Technology: The idea that the technological superiority or outdatedness of a product of an organization will weaken or reinforce trust as a function of experience.

In essence, trust is a set of six factors, and these factors are related to several personal characteristics such as dependability, reliability, and honesty (Joon, 2002).

2.7 Convenience

Copeland (1923) introduced the concept of convenience as goods that consumers can purchase frequently and easily at convenient retail locations. In the context of convenience classification, Copeland (1923) and Bucklin (1963) have looked into low risk or low involvement in purchasing (Brown, 1989). Consequently, some researchers have changed their strategies from a product attributes-oriented to a service attributes-oriented approach in an effort to operationalize the concept (Seiders et al., 2007).

Consumer convenience is often addressed through time-saving and effort minimization efforts, which are both of primary importance in delivering convenience to customers (Seiders et. al., 2007; Yale and Venkatesh, 1986). From an analysis of the literature, Berry et al. (2002) concluded that consumers perceive service convenience as being lower the higher the time costs associated with a service. Specifically, they suggested that the perception of the cognitive, physical, and emotional effort associated with the shopping process negatively influences consumer perceptions of convenience.

Berry et al. (2002) and Seiders et al. (2007) reviewed the literature regarding consumer convenience in the service economy, which defined "service convenience" as consumers' perceptions of time and effort involved in using a service. According to Berry et al. (2002), service conveniences result in time and/or effort savings, while the burdens of inconvenience are associated with time and/or effort waste. As a result, researchers have classified and analyzed major findings of prior research in terms of two elements identified by Berry et al. (2002; Seiders et al., 2007).

The convenience characteristics have been classified into five activity-based dimensions, which reflect the activities consumers undertake to purchase or use a service,

based on the dimension of time and effort Berry et al. (2002) incorporated into the process of consumer decision-making. Consumers perceive five types of time and effort expenditures related to service purchase or use choices: decision (planning/decision-making time), access (getting services), transaction (performing a transaction), possession (getting a possession the service or goods), and post-possession convenience (the ease of getting repairs or maintenance etc. after a benefit has been gained from a service).

In this research, two elements of convenience will be emphasized, namely, possession convenience and post possession convenience, for two reasons, namely, the overlap of other elements with the variables selected in the study, and the complementary relationship of these two elements with other study variables.

2.7.1 Possession Convenience

Possession convenience refers to the ease and speed at which a consumer will be able to obtain a desired product. Seiders et al., (2000, p. 85). By focusing on the costs, time, and difficulties associated with buying a particular product on a particular channel (Bhatnagar and Ratchford, 2004), consumers can shop for and inspect a product online and in physical stores, then place orders and complete their shopping. It can be considered a non-cash cost associated with e-commerce to complete all steps in the online purchasing and delivery process (Beauchamp and Ponder, 2010). This leads to the following hypotheses:

2.7.2 Post-Purchase Convenience

Considering this factor, after purchasing the products, the customers need after-sales service such as refunds, and ongoing security such as the protection of their personal information (Kaura et al., 2015).

Chapter 3: RESEARCH METHODOLOGY

In this part of the research, information about the country of Libya will be presented, and the methodology that was relied upon in this research will be explained, in addition to an explanation of the scale structures used, with an explanation of the statistical methods that will be used and their analyses.

1.1. An Overview of Mobile Shopping in Libya

Mobile shopping has become increasingly popular in recent years all around the world, and Libya has also been one of the countries affected by this trend. Libya is a North African country that takes place south of the Mediterranean Sea. The total population of Libya reached 7 million, with an increase of 85 thousand people, at a rate of 1.2% between 2021 and 2022, as the number of males reached 50.5% and females 49.5%, according to the latest report issued at the beginning of 2022 (Datareportal, 2022). About81.3% of the population live in urban centers, while 18.7% in rural areas. According to the report, 3.47 million Libyans had access to the Internet in January 2022. The number of internet connections in Libya increased by 320,000 (+10.1%) between 2021 and 2022. The average mobile internet speed was 11.34 Mbps which has increased by +8.8% between 2021 and 2022. On the other hand, the number of mobile devices (phones) in Libya reached 11.87 million cellular mobile connections in Libya at the start of 2022 (Datareportal, 2022). According to Sensor Tower which is a leading provider of enterprise-grade market intelligence and performance metrics for the digital ecosystem, the applications used by Libyan shoppers are OpenSooq, Baahy, AliExpress, Dokkan E-commerce, E-Zad Store, Jibli, Mostaml, Sadeem, Libyamarts, and other apps. Through these applications, a large number of products are purchased, including small home appliances.

1.2. Study Methodology

Guba and Lincoln (1994) define a philosophical model as a set of convictions or world view that guides research or investigation, so the positivist model will be adopted as the scientific method of the following philosophy:

First: The philosophy of beliefs: the philosophy of Epistemology science will be adopted in the beliefs of this study, which means trying to reach the truth by understanding the relationships between the variables of the study.

Second: The philosophy of actions consists of two dimensions:

- **Axiology**: The objective method will be adopted, which means isolating the researcher himself and not affecting the study.
- **Methodology**: The deductive approach will be adopted to test the study model to know and determine whether the variables are related, through the use of the descriptive approach to describe the facts of the phenomenon of behaviour intention of mobile shopping, by adopting the quantitative approach.

1.3. Study Model Variables

Through the previous discussion of the mobile shopping intention and the factors affecting the behavioral intention through the theories that were listed, and based on the UTAUT2 model, a study model was proposed (see Figure 2.1) to examine the influence of factors affecting behavior intention of mobile shopping to buy small home machines.

In this proposed model, Performance Expectancy, Effort Expectations. Social Influence, Facilitation Conditions, Habit, Price Value perceived risks, trust, possession convenience and post possession convenience were an independent variables, the direct effects of which are measured on the behavior intention of mobile shopping as a dependent variable.

On the other hand, the demographic variables, which are age and income, were added as moderate variables with the previous independent variables, and their interactions with each other will measured on influencing behavior intention of mobile shopping to buy small home machines.

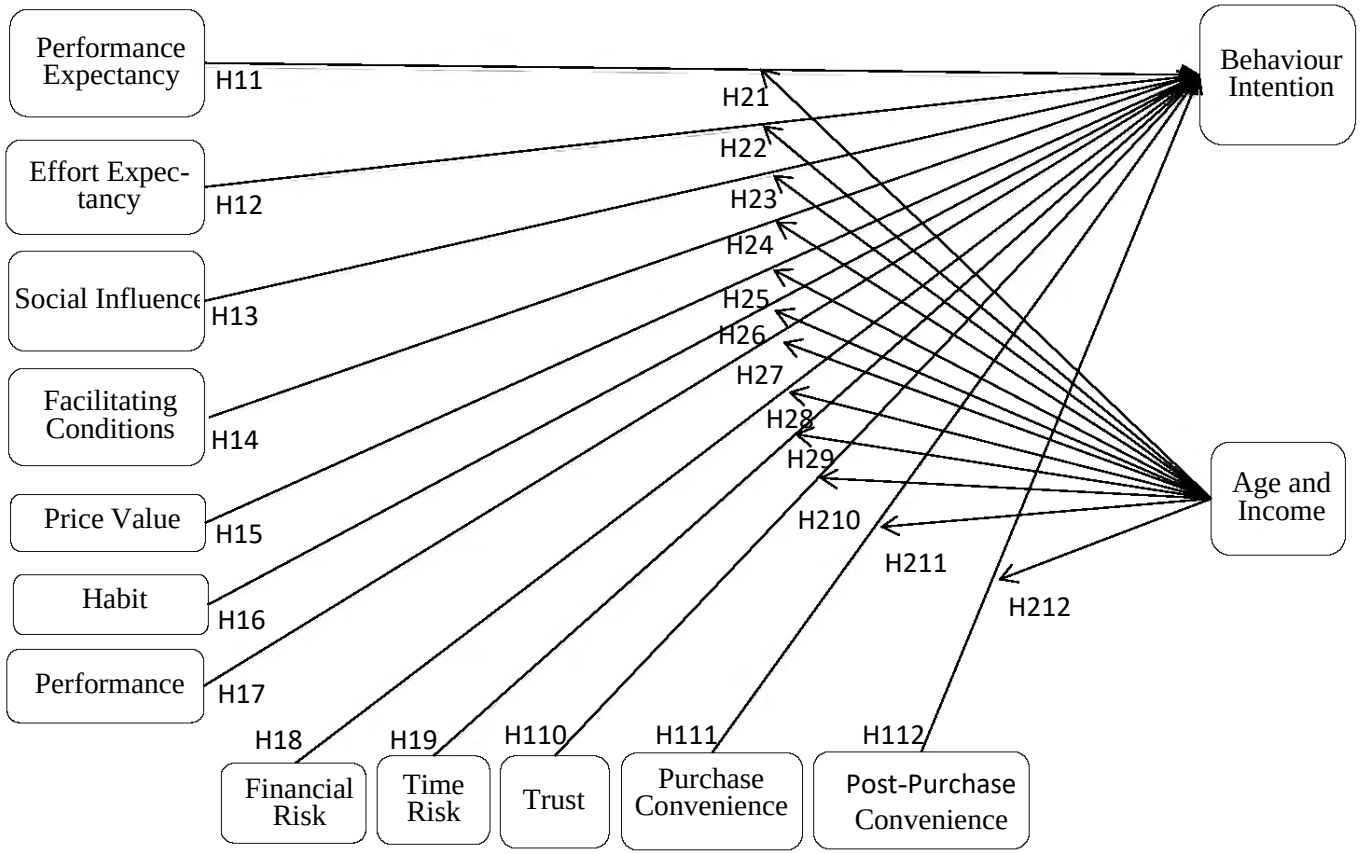


Figure 2.1 *Model of Study*

1.4. Structure of Questionnaires and Measurement Scales

After reviewing the literature, several questionnaires were found to fit the context of the research objectives, hypotheses, target sample, and the variables in the research model. Then, experienced professors in the relevant field reviewed and changed items that did not match those being measured as well as removed some unrelated items. Eventually, the process yielded a questionnaire consisting of 54 items distributed across 13 main components. The questionnaire covered the following variables:

1.4.1. UTAUT2 Variables

The scales of this part were adapted from Vekintash et al. (2003) and Vekintash et al. (2012) except for behavioral intention because the decision to continue with mobile shopping is a type of behavioral decision (Lu et al., 2017). The scales for the UTAUT constructs (i.e., performance expectancy, effort expectancy, social influence, facilitating conditions, and continuous use) were adapted from Venkatesh et al. (2003), and the habit and price value scales were adopted from Vekintash et al. (2012).

1.4.2. Perceived Risks Variables

Upon reviewing previous studies, it was noted that several types of perceived risks were covered in the literature. As mentioned earlier, the focus in this study was on three types of risks, namely, financial risks, performance risks, and time risks that affect mobile phone shopping, because most of the studies reviewed dealt with these three risks as basic risks (see Table 3). The measurement scales used in this study are financial risk and time risk scales from (Masoud, 2013) and performance risk measures adopted from DelVecchio et al. (2005). The reason for choosing these scales is that they include more than three items for dimension, due to considerations of credibility and reliability, which are recommended to include more elements to avoid weakness resulting from the lack of paragraphs of the dimension. Moreover, the scale by Masoud (2013) indicated the need to apply it in different contexts and combine it with demographic variables for the aim of explaining the low variance. This requires further investigation on how to integrate these

results with other established technology acceptance models, in addition to the study contexts of Masoud (2013) and DelVecchio et al. (2005).

1.4.3. Trust variable

After reviewing the existing literature examining trust and its relationship with perceived risks and uncertainty, the scale of Vekentash et al., (2005) that utilizes "online trust" as a variable was adopted for this study. The reason for choosing the Vekentash scale is the strength of the correlations between the latent structures (i.e., 0.86 of the correlations between its components).

1.4.4. Conveniences variables

After reviewing previous literature examining possession and post-possession conveniences and their relationship with e-shopping, the scale of Mahapatra (2017) that utilizes the convenience of mobile shopping among young consumers was adopted as a variable in this study. The reason for choosing these two measurement scales is to measure the convenience that can be obtained by mobile shopping users, where convenience is believed to be among the most sought benefit by shopping research (Mahapatra, 2017).

To draft the final version of the questionnaire, several contributors in the Arabic language and marketing will be relied upon to assist in making the necessary conceptual corrections to the draft questionnaire after translation. A pilot test will be conducted to test the adequacy and clarity of the questions to ensure proper comprehension of the questions by the participants. A convenience sampling technique will be used for collecting data. The process of distributing the questionnaire to the target sample will be done using Google Forms to send a link to the questionnaire to the target sample via e-mail or social media. A five-point Likert scale will be utilized in this questionnaire ranging from 1 "strongly disagreed" to 5 "strongly agreeing" for each item. Reliability and validity tests will be conducted before the data analysis.

Table 3.1. *Questionnaire Items that have been Approved*

	Items	Source
Performance Expectancy		
PE1.	I find mobile shopping to buy small home appliances useful in my daily life.	Venkatesh et al., (2012)
PE2.	Using mobile shopping to buy small home appliances increases my chances of achieving things that are important to me.	
PE3.	Using mobile shopping to buy small home appliances helps me accomplish things more quickly.	
PE4.	Using mobile shopping to buy small home appliances increases my productivity.	
Effort Expectancy		
EE1.	Learning how to use mobile shopping to buy small home appliances is easy for me.	Venkatesh et al., (2012)
EE2.	My interaction with mobile shopping to buy small home appliances is clear and understandable.	
EE3.	I find mobile shopping to buy small home appliances easy to use.	
EE4.	It is easy for me to become skillful at using mobile shopping to buy small home appliances.	
Social Influence		
SI1.	People who are important to me think that I should use mobile shopping to buy small home appliances.	Venkatesh et al., (2012)
SI2.	People who influence my behavior think that I should use mobile shopping to buy small home appliances.	
SI3.	People whose opinions that I value prefer that I use mobile shopping to buy small home appliances.	

Table 3.1. (Continue) Questionnaire Items that have been Approved

Facilitating Conditions		
FC1.	I have the resources necessary to use mobile shopping to buy small home appliances.	Venkatesh et al., (2012)
FC2.	I have the knowledge necessary to use mobile shopping to buy small home appliances.	
FC3.	Mobile shopping to buy small home appliances is compatible with other technologies I use.	
FC4.	I can get help from others when I have difficulties using mobile shopping to buy small home appliances.	
Price Value		
PV1.	Mobile shopping to buy small home appliances is reasonably priced.	Venkatesh et al., (2012)
PV2.	Mobile shopping to buy small home appliances is a good value for the money.	
PV3.	At the current price, mobile shopping to buy small home appliances provides a good value.	
Habit		
HT1.	The use of mobile shopping to buy small home appliances has become a habit for me.	Venkatesh et al., (2012)
HT2.	I am addicted to using mobile shopping to buy small home appliances.	
HT3.	I must use mobile shopping to buy small home appliances.	
HT4.	Using mobile shopping to buy small home appliances has become natural to me.	
Behavioral Intention		
BI1.	I intend to continue using mobile shopping to buy small home appliances in the future.	Venkatesh et al., (2012)
BI2.	I will always try to use mobile shopping to buy small home appliances in my daily life.	
BI3.	I plan to continue to use mobile shopping to buy small home appliances frequently.	

Table 3.1. (Continue) Questionnaire Items that have been Approved

Financial Risk		
FR1	Shopping online using mobile to buy small home appliances can involve a waste of money.	(Masoud, 2013)
FR2	I feel that my credit information may not be secure if I shop online using mobile to buy small home appliances.	
FR3	I might get overcharged if I shop online using mobile to buy small home appliances.	
FR4	If I shop online using mobile to buy small home appliances, I may not get the product I want.	
FR5	I can't trust the online company if I shop online using mobile to buy small home appliances.	
Performance Risk.		
PR1	I am certain that using mobile shopping to buy small home appliances would satisfactorily.	DelVecchio et al., (2005)
PR2	I am likely to have problems with the performance of I using mobile shopping to buy small home appliances.	
PR3	If using mobile shopping to buy small home appliances, the consequences can be fairly severe.	
PR4	Using the wrong mobile shopping to buy small home appliances can lead to very negative outcomes.	
PR5	I need to be careful when using mobile shopping to buy small home appliances since a lot can go wrong when you use it.	
PR6	There is a little can be go wrong when using a mobile shopping to buy small home appliances.	
Time Risk		
TR1	Buying small home appliances online using mobile phone can involve a waste of time.	(Masoud, 2013)
TR2	Difficult using mobile online shopping to find appropriate small home appliances.	

Table 3.1. (Continue) Questionnaire Items that have been Approved

TR3	Finding right small home appliances using online mobile shopping is difficult.	
TR4	If I using mobile shopping to buy small home appliances, I cannot wait till the product that I bought it arrives.	
TR5	Too complicated to place order if I doing purchase small home appliances online using mobile phone.	
TR6	Communicating with the seller may require a lot of time if I doing purchase small home appliances online using mobile phone.	
Trust		
TS1	Mobile shopping to buy small home appliances appears to be more trustworthy than other Shopping operations.	
TS2	E-stores or mobile shopping companies offering small home appliances products for sale are organizations that will deliver on promises made.	Vekentash et al., (2005)
TS3	My overall trust in mobile shopping to buy small home appliances is good.	
TS4	My overall believability of the information on mobile shopping to buy small home appliances is good.	
TS5	My overall confidence in the recommendations on mobile shopping to buy small home appliances is good.	
Possession Convenience		
PC1	small home appliances that I bought using mobile shopping were delivered are undamaged.	
PC2	I received all the small home appliances ordered that I bought using mobile shopping.	Mahapatra (2017).
PC3	small home appliances that I bought using mobile shopping delivery is timely.	
PC4	The prices of delivered small home appliances that I bought using mobile shopping are identical to those on the ordered.	

Table 3.1. (Continue) Questionnaire Items that have been Approved

Post-Purchase Convenience		
PPC1	It takes little effort to return unwanted small home appliances that I bought using mobile shopping.	Mahapatra (2017).
PPC2	My personal information is not misused when I bought small home appliances using mobile shopping	
PPC3	I am able to provide feedback after consumption of small home appliances that I bought using mobile shopping.	

1.5. Participants

The Libyan market is a fertile ground for conducting studies in the field of technology for several reasons:

1. In line with Venkatesh's (2003; 2012) recommendations to apply the model in developing countries, the focus here is on Libyan shoppers in their developing (Libyan) market, which would add to the respective marketing literature.
2. The internet penetration rate in Libya is %84, which is the second-highest rate among Arab countries in North Africa (after Tunisia) according to a report by GSMA (2020). Additionally, the percentage of internet shoppers as a percentage of internet users is 23%, while this number may be considered weak but it is the third-highest among the Arab countries (after Saudi Arabia and the United Arab Emirates). As a result, such a study could highlight such shortcomings in the Arab markets towards working on future solutions (UNCTAD, 2019).
3. No previous studies have applied the UTAUT2 model applied to study the mobile shoppers in Libya according to the researcher's knowledge (See the appendix to the articles reviewed on the Arab countries).

Accordingly, Libyan online shoppers were chosen as the population of this research from which the required data for this study was collected. The convenience sampling method is more appropriate for this study than random sampling as the participants are easily reachable. A team of faculty members were formed in some universities in Libya to help disseminate the questionnaire link directly and via social media. Additionally, the team members were asked to forward the link to their friends, relatives, and colleagues to increase the participation rate in the survey. The criteria

according to which participants were included in the sample were being a mobile online shopper aged 18 and over.

1.6. Hypotheses of the Study

Hypotheses of study can be formulated after refining the concepts of the variables as follows:

1. Performance Expectancy: It indicates how a person believes that continuance using the system will improve their job performance." A previous study indicates that expected performance is an important predictor of continuance using as a behavioral intention in most situations (Lu et al., 2017). Venkatesh et al. (2003) explained that the performance expectancy is an antecident for intention; the effect of age on this relationship varies considerably. Thus, the following hypotheses can be formulated:

   H1.1: Performance expectancy positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H1.2: The influence of performance expectancy on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age and income, such that the effect will be stronger for younger higher-income earners.

2. Effort Expectancy: Venkatesh et al. (2003) compare effort expectancy to the degree of ease with which a person can use the system. Previous research suggests that latent variables associated with average expected effort were associated with an individual's willingness to adopt new technology, and the effect of effort expectancy was more significant for older workers (Zhou et al., 2010; Chen et al., 2012). Accordingly, the following hypotheses are formulated:

   H2.1: Effort expectancy positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H2.2: The influence of effort expectancy on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age and income, such that the effect will be stronger for older with higher-income earners.

3. Social Influence: In Venkatesh et al.'s (2012) study, consumers perceive how others perceive them (e.g., family, friends) to be able to use a specific technology. Researchers have found that social influence has an important role to play in influencing an individual's desire to adopt new technology during its early stages of experience and adoption, especially for older workers (Venkatesh et al., 2003; Raman and Don 2013). Accordingly:

   H3.1: Social influence positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H3.2: The influence of social influence on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age and income, such that the effect will be stronger for older with higher-income earners.

4. Facilitating Conditions**:** The degree to which an individual believes that the system is supported by a technical and organizational infrastructure (Venkatesh et al., 2003). Earlier studies found that facilitating conditions are critical in influencing the intention to use new technology (Venkatesh et al., 2003; Raman and Don, 2013). It was also observed that the effect of facilitation conditions on intention is greater in older individuals. Based on this, the following hypotheses are formulated:

   H4.1: Facilitating conditions positively influence the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H4.2: Age and income will moderate the effect of facilitating conditions on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older with higher-income earners.

5. Price Value: The price value of an application is determined by a consumer's tradeoff between the perceived benefits and the monetary cost of using the application, as defined by Venkatesh et al. (2012). A positive price value is indicated when the perceived benefits of using a technology outweigh the monetary costs, and such a price value increases the intention to use that technology (Dodds et al., 1991). Taking this into consideration, the following suggestion is made:

H5.1: Price Value positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

H5.2: Age and income will moderate the effect of price value on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older lower-income earners.

6. Habit**:** Limayem et al. (2007) define automaticity as how much people rely on learning to do things automatically, while Kim et al. (2005) describe it as a habit. The concepts of habit and automaticity have been operationalized in two different ways: first, habit is conceptualized as prior behavior (Kim and Malhotra, 2005), and second, automaticity is measured in terms of whether the individual considers a behavior to be automatic (Limayem et al., 2007; Venkatesh et al., 2003). This point allows us to determine hypotheses as follows:

   H6.1: Habit positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H6.2: Age and income will moderate the effect of habit on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older higher-income earners.

7. Performance risk: Concern about the effectiveness of the communication channel, combined with the quality of product performance and increased concern that the product cannot be returned, can be categorized as a performance risk that will limit the thought of doing online shopping (Forsythe et al., 2006), which means that increasing this risk, will reduce the continuity of customers to do mobile shopping. Therefore, the hypothesis can be formulated as follows:

   H7.1: Performance risk will affect negatively the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H7.2: Age and income will moderate the effect of Performance risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older higher-income earners.

8. Financial risk: The fear of losing money or delivering a defective product may lead to a negative impact on the behavioral trends of shoppers (Masoud, 2013), which means that the increase in financial risks will reduce the continuity of customers in doing mobile shopping. Therefore, the hypothesis can be formulated as follows:

   H8.1: Financial risk will affect negatively the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H8.2: Age and income will moderate the effect of financial risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older higher-income earners.

9. Time risk: The negative impact of the time spent doing online shopping or waiting for a product or service may be considered a time risk (Janakiraman et al., 2011), and this means that increasing the time risk, will reduce the customers' continuity in doing mobile shopping. Therefore, the hypothesis can be formulated as follows:

   H9.1: Time risk will affect negatively the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

   H9.2: Age and income will moderate the effect of Time risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older higher-income earners.

10. Trust: The behavioral intention to adopt technology is heavily influenced by trust (Alalwan et al., 2015; Hanafizadeh et al., 2014) because of its inverse association with risk. As a result, higher trust in technology reduces its perceived risk and positively influences behavior (Sharma and Sharma 2019). From this point the hypothesizes can be determined as follows:

    H10.1: Trust positively influences the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers.

    H10.2: Trust will influence Libyan shoppers' acceptance and usage of mobile shopping to buy small home appliances that will be moderated by age and income, where the effect is stronger for younger lower-income earners.

11. Possession convenience: by focusing on costs, time, and difficulties associated with the purchasing process, the consumer can shop and inspect a product through stores and online platforms and then place the order and complete shopping. The time required to complete all steps in the online purchase and delivery process can be considered a non-cash cost associated with e-commerce (Beauchamp and Ponder, 2010). From this point the hypothesizes can be determined as follows

    H11.1: Possession convenience positively affects the Behaviour intention of mobile shopping for small household appliances by Libyan shoppers.

    H11.2: Possession convenience will influence Libyan shoppers' acceptance and usage of mobile shopping to buy small home appliances that will be moderated by age and income, where the effect is stronger for older higher-income earners.

12. Post possession convenience: According to this factor, after purchasing the products, the shoppers need after-sales service (e.g., refund) and subsequent security (e.g. the protection of the customer's personal information (Kaura, Durga, Sharma, 2015).

    H12.1: Post-possession convenience positively affects the Behaviour intention of mobile shopping for small household appliances by Libyan shoppers.

    H12.2: Post-possession convenience will influence Libyan shoppers' acceptance and usage of mobile shopping to buy small home appliances that will be moderated by age and income, where the effect is stronger for older higher-income earners.

Chapter 4: PILOT STUDY, RELIABILITY AND VALIDITY

4.1 Pilot Study

The use of valid and reliable tests or instruments is crucial to ensuring the scientific validity of the research (e.g. Kimberlin and Winterstein, 2008), so to rely on the measuring instrument of this research, it must pass two basic tests: validity and reliability as two important terms used in measuring the validity of measuring instruments, validity as a term indicating the degree to which a measuring instrument can measure what it is supposed to measure (e.g. Anastasi and Urbina, 1997; Oluwatayo, 2012). Reliability refers to the internal consistency and consistency of the questionnaire elements and their ability to represent the concept to be measured and the possibility of its re-application (e.g. Jack and Clarke, 1998; Cavana et al., 2011). The first step that was taken in the field was the distribution of the quesitonnaire adopted in this study. Since the traditional hand distribution of the questionnaires was not possible due to the geographical distance of the target survey sample, in addition to being affected by the issue of social distancing due to the impact of the Coronavirus pandemic, Google form was used, in which 95 questionnaires were distributed to the targeted people from the various regions of Libya, to test the validity and reliably of measurement instrument through internal consistency and correlations between the items of the questionnaire used.

Hair et al. (2016) recommends that the validty of a measurement model can be tested in two parts: convergent validity and discriminant validity. The convergent validity is determined by the average variance extracted (AVE) to evaluate internal consistency and the composite reliability is to evaluate internal consistency. Discriminant validity is determined by the Heterotrait-Monotrait (HTMT) ratio of correlations that can be used to measure discriminant validity.

A measure's convergent validity is its ability to correlate positively with alternative measures of the same construct, as defined by Hair et al. (2016). Domain sampling refers to the treatment of indicators of a reflective construct as different (alternative) means of measuring the same construct.

Two preliminary pilot studies were conducted to test the measurement instrument, In the first pilot study the sample was 30 and was conducted with the variables of the UTAUT2 model and a set of variables, namely: item (1) from the scale by Fastoso et al., (2012) and items (2-3) from the scale by Guru et al., (2020) for performance risk variable, items (1-3) from the scale by Crespo et al., (2009) and item (2) from the scale by Guru et

al., (2020) for financial risk variable, items (1) from the scale by Crespo et al., (2009) and items (2,3,4) from the scale by Guru et al., (2020) for the time risk variable. Due to the weakness of the validity and reliability coefficients and the internal loadings of most of the items of paragraph scales for these variables, the hedonic motivation variable was dropped, and all measures of risk variables were replaced by measures from other studies described in chapter 3.

In the secound pilot study the sample was 95, the itemes of Perceived risks were changed as follwing: financial risk and time risk itemes was taken from Masoud (2013) scale rather than old itemes, performance risk measures was adopted from DelVecchio et al. (2005). In addation, other variables were added which are trust from the scale of Vekentash et al., (2005), possession conveniences and post-possession conveniences from the scale of Mahapatra (2017) rather than hedonic motivation that was droped in the first pilot study. So in the secund pilot study was used the UTAUT2 variables without hedonic motivation and perceived risks with new itemes, trust, possession conveniences and post-possession conveniences. Due to the weakness of the validity and reliability coefficients of Performance Risk variable, FR3, TR6 and TS4, so those items wrer dropped in the second pilot study.

4.2 Data Collection

The data were collected using a survey method, in which respondents from three regions of Libya filled out a questionnaire via a Google Form. An initial question was asked to the target audience regarding whether to use mobile shopping or not. Respondents who did not use mobile shopping were dropped. Distribution took 45 days. Out of a total of 794 questionnaires distributed, 706 were usable.

4.3 Data Analysis

Data will be analyzed using Smart PLS (version 3.0) and SPSS software (version 18), and statistical significance was set at $p > 0.05$ as a critical criterion. Anderson and Gerbing (1988) recommend a two-step approach for analysis. As part of the assessment, the recommended procedural remedies were first used to assess the measurement model's reliability and validity, followed by the assessment of the structural model and hypothesis testing using a bootstrapping approach.

4.4 Missing Data

After revising the questionnaire and adding other additional variables and questions, the questionnaire became rather long, which caused the respondents to evade the questionnaire and not complete it, as it was noticed that a set of forms were incomplete, in addition to the responses of several respondents towards the length of the questionnaire, On the recommendation of one of the contributors to the process of distributing the form, the feature of forcing respondents to answer was abolished, in place of it by targeting a larger number of respondents. Since the planned target number in this study is 700, to reach this number of respondents, the actual targeting process amounted to 794 respondents, to allow respondents, the freedom to move to the next question and explore the questions of the questionnaire without forcing them to answer the previous question. In summary, 706 valid forms were obtained for analysis. 88 responses were eliminated as the missing data were higher than 30%, and those below this percentage were accepted. Missing values were handled by replacing them with the number (-100).

4.5 Reliability and Validity of the Instrument

This analysis included 54 items for 13 variables where 706 participants participated, and it seems that the sample size is sufficient to represent the study population compared with the Steven K. Thompson equation, which determined the study sample size with 384 respondents. Thus, the collected data is sufficient to conduct a factor analysis.

4.5.1 Convergent Validity

As part of the convergence validity assessment, Cronbach's alpha coefficient and the composite reliability were used to assess the internal consistency and reliability of the single indicator, while the extracted mean of variance (AVE) was used to evaluate the validity of convergence. In line with the overall context of the questionnaire, before conducting the analysis, the same corrections were made to the survey sample for the negative items in the measurement tool of financial risk, performance risk, and time risk items.

Table 4.2. *Construct Reliability and Validity*

Constructs	Items	Loading	Cronbach's Alpha	CR	(AVE)
CU	CU1	0.844	0.853	0.911	0.773
	CU2	0.895			
	CU3	0.898			
EE	EE1	0.747	0.837	0.890	0.671
	EE2	0.843			
	EE3	0.848			
	EE4	0.833			
FC	FC1	0.815	0.763	0.863	0.677
	FC2	0.803			
	FC3	0.850			
HB	HB1	0.837	0.801	0.896	0.683
	HB2	0.852			
	HB3	0.842			
	HB4	0.773			
PE	PE1	0.853	0.856	0.903	0.699
	PE2	0.898			
	PE3	0.832			
	PE4	0.756			
PC	PC1	0.785	0.804	0.871	0.629
	PC2	0.777			
	PC3	0.775			
	PC4	0.832			
PPC	PPC1	0.878	0.792	0.877	0.705
	PPC2	0.750			
	PPC3	0.884			
PV	PV1	0.781	0.755	0.859	0.671
	PV2	0.863			
	PV3	0.811			

Table 4.2. (Continue) *Construct Reliability and Validity*

SI	SI1	0.848	0.720	0.843	0.642
	SI2	0.804			
	SI3	0.748			
TH	TH1	0.772	0.799	0.869	0.624
	TH2	0.829			
	TH3	0.795			
	TH5	0.762			
TR	TR3	0.767	0.735	0.867	0.685
	TR4	0.898			
	TR5	0.813			
FR	FR1	0.725	0.801	0.848	0.529
	FR4	0.757			
	FR5	0.803			

Table 4.2 shows the results of Cronbach's alpha coefficient, the convergent validity of the composite reliability (CR), the reliability of the single index, and average mean-variance (AVE). Cronbach's alpha coefficient scores for the multicomponent scales were 0.720 or greater, indicating that these measures are reliable. On the other hand, the values of the outer loadings of the items used were higher than 0. 747 for most items, and those ratios are higher than the minimum ratio (0.70) allowed in the humanities and social sciences, including marketing (e.g., Nunnally and Bernstein, 1994; Shelby, 2011; Hair et al., 2016).

Regarding weak scores and weak outer loadings, the following items of used variables were dropped due to their poor reliability scores, whether at the individual level or the composite reliability.

Table 4.3. *Construct Reliability and Validity for Dropped Variable*

Constructs	**Items**	**Loading**	**Cronbach's Alpha**	**CR**	**(AVE)**
FC	FC4	0.586	0.730	0.833	0.558
TR	TR1	0.402	0.803	0.842	0.482
	TR2	0.578			
FR	FR4	0.675	0.801	0.848	0.529

The values of the outer loading for the items used for the Performance Risk variable were weak except for PR1, which had to be deleted. In addition, components FC4, TR1, TR2 and FR4 have been omitted due to their low loadings (Nunnally and Bernstein, 1994; Shelby, 2011; Hair, et al., 2016).

4.5.2 Discriminatory Validity

According to empirical criteria, discriminatory validity is the definition of a construct's ability to distinguish itself from other constructs based on the degree of difference between them. In this way, establishing discriminative validity means that the construct is distinct from others in the model and enables it to capture phenomena not represented by the other constructs as well (Hair et al., 2016). Fornell-Larcker and Cross Loadings are two aspects of Discriminant Validity that were used in the present study: cross-loadings and external loadings. The indicator's external loading on the linked construction should be greater than any of the cross-loadings (i.e., their association); in the other constructs, in this study, two dimensions of Discriminant Validity were considered: Fornell-Larcker and Cross Loadings.

Fornell-Larcker Criterion measures the discriminative validity of the strength of the bonding of a building compound with itself compared to other compounds, where the bonding of a building compound with itself must be stronger and higher than its bonding with other compounds (Hair et al., 2016).

Table 4.4. *Latent Variable Correlations - Fornell-Larcker Criterion*

	CU	EE	FC	HB	FR	PE	PC	PPC	PV	SI	TH	TR
CU	**0.879**											
EE	0.460	**0.819**										
FC	0.473	0.626	**0.747**									
HB	0.661	0.395	0.484	**0.826**								
FR	0.080	0.082	0.046	0.049	**0.727**							
PE	0.625	0.608	0.540	0.525	0.044	**0.836**						
PC	0.400	0.393	0.440	0.337	0.028	0.378	**0.793**					
PPC	0.142	0.099	0.152	0.090	0.074	0.064	0.175	**0.840**				
PV	0.536	0.381	0.451	0.499	-0.002	0.567	0.462	0.100	**0.819**			
SI	0.534	0.370	0.450	0.425	0.011	0.525	0.284	0.117	0.406	**0.801**		
TH	0.589	0.371	0.427	0.477	0.034	0.474	0.569	0.109	0.468	0.412	**0.762**	
TR	-0.208	-0.085	-0.179	-0.145	0.122	-0.085	-0.169	-0.092	-0.065	-0.225	-0.306	**0.694**

The values in bold in Table 4.4 indicate that the cross-loading of the structures is indicative of a discriminative validity of the constructs. The matrix can identify this intersection for each construct with other constructs that have greater values in themselves

than others, indicating the correctness of the character combinations that can be trusted. For example, it notes that the Fornell-Larker criterion for predicting performance is (0.836), which is the largest value in its longitudinal and transverse intersection of any other compound compared to the exact performance prediction. Measure all the values of the matrix.

After examining the Latent Variable Correlations - Fornell-Larcker Criterion to get evidence of the multiple linear relationships between the external structures of the study variables. It is noted that the highest correlation of the compound with the exogenous constructs was (0.608). It was found that to accomplish the purpose of assessing how much the dependent variable affected the different constructs, Variance inflation factors (VIFs) were used. These factors depend on what part of the variance of the dependent variable the independent variable shares with other independent variables. A collinearity measure is a measure of how the independent variable of the dependent variable is related to the other independent variables in the analysis. It has a direct relationship with the variance of the regression coefficient associated with an independent variable. As a measure of collinearity, the VIF has the advantage that it brings a clear understanding of the effect of collinearity on the estimation of the variance of the regression coefficient, which is one of the reasons for its popularity.

Table 4.5. *Variance Inflation Factors (VIFs) (and Tolerance)*

Bath	**Collinearity Statistics**	
	Telerance	VIF
Performance Expectancy	.422	2.372
Effort Expectancy	.521	1.919
Social Influence	.551	1.815
Facilitating Conditions	.490	2.040
Price Value	.566	1.768
Habit	.576	1.737
Financial Risk	.954	1.049
Time Risk	.854	1.171
Trust	.522	1.914
Possession convenience	.506	1.976
Post Purchase Convenience	.935	1.070

It is noticed from Table 4.5 that the coefficients of the VIFs are between (1.17) and (2.37), and they are in the permissible range and less than the conservative threshold of 4, according to what was indicated by O'brien, (2007), which suggests that the multi-linear relationship intact in this study. Also, the value of the tolerance expresses the amount of variance of the specific independent variable that is not explained by other independent variables in the model (O'brien, 2007). O'Brien (2007) confirmed that the value of the tolerance should not be less than (0.1), and this condition was fulfilled by looking at the above table that the lowest tolerance values are 0.42.

Similarly, Table 4.6 shows Cross Loadings for component items, which are similar to the Fornell-Larcker Criterion, except that Cross Loadings measure the discriminative validity of the items and not the constructions, as it is noticed that the cross-loadings of the loads are high loads on the corresponding structure.

Table 4.6 *Discriminant Validity - Cross Loadings of Items with Components*

	CU	EE	FC	HB	PE	PC	PPC	PV	SI	SI	TR
CU1	**0.844**	0.409	0.375	0.542	0.589	0.325	0.114	0.476	0.438	0.535	-0.204
CU2	**0.895**	0.381	0.398	0.567	0.518	0.408	0.152	0.507	0.507	0.519	-0.174
CU3	**0.898**	0.422	0.415	0.633	0.540	0.322	0.109	0.430	0.462	0.508	-0.182
EE1	0.316	**0.747**	0.417	0.260	0.532	0.319	0.075	0.349	0.221	0.249	0.042
EE2	0.322	**0.843**	0.472	0.325	0.496	0.353	0.056	0.269	0.274	0.274	-0.068
EE3	0.427	**0.848**	0.525	0.349	0.522	0.361	0.127	0.304	0.398	0.353	-0.170
EE4	0.417	**0.833**	0.460	0.347	0.453	0.262	0.060	0.330	0.294	0.312	-0.037
FC1	0.334	0.367	**0.815**	0.326	0.433	0.322	0.121	0.358	0.313	0.274	-0.120
FC2	0.344	0.609	**0.803**	0.388	0.423	0.392	0.117	0.347	0.310	0.286	-0.051
FC3	0.424	0.449	**0.850**	0.441	0.457	0.310	0.107	0.364	0.400	0.425	-0.189
HB1	0.580	0.343	0.461	**0.837**	0.509	0.357	0.109	0.483	0.419	0.440	-0.096
HB2	0.532	0.311	0.380	**0.852**	0.388	0.278	0.087	0.380	0.367	0.392	-0.205
HB3	0.608	0.281	0.320	**0.842**	0.434	0.256	0.031	0.424	0.350	0.412	-0.092
HB4	0.442	0.391	0.413	**0.773**	0.396	0.211	0.074	0.350	0.250	0.300	0.015
PE1	0.520	0.521	0.504	0.479	**0.853**	0.305	0.115	0.537	0.453	0.390	-0.118
PE2	0.575	0.547	0.487	0.456	**0.898**	0.346	0.015	0.496	0.486	0.439	-0.077
PE3	0.535	0.537	0.396	0.455	**0.832**	0.322	0.059	0.451	0.444	0.344	-0.065
PE4	0.452	0.417	0.389	0.357	**0.756**	0.291	0.023	0.409	0.365	0.357	-0.037
PC1	0.293	0.335	0.338	0.189	0.286	**0.785**	0.130	0.324	0.178	0.427	-0.112
PC2	0.269	0.321	0.322	0.241	0.322	**0.777**	0.101	0.277	0.197	0.391	-0.102
PC3	0.342	0.216	0.325	0.319	0.271	**0.775**	0.216	0.395	0.222	0.485	-0.091
PC4	0.351	0.379	0.323	0.305	0.325	**0.832**	0.099	0.443	0.290	0.485	-0.139
PPC1	0.101	0.057	0.092	0.029	0.010	0.129	**0.878**	0.030	0.051	0.089	-0.055
PPC2	0.137	0.115	0.132	0.131	0.108	0.131	**0.750**	0.149	0.164	0.084	-0.045
PPC3	0.108	0.065	0.115	0.045	0.023	0.177	**0.884**	0.048	0.055	0.104	-0.044

Table 4.6 (Continue) *Discriminant Validity - Cross Loadings of Items with Components*

PV1	0.370	0.288	0.333	0.308	0.435	0.385	0.056	**0.781**	0.290	0.296	-0.009
PV2	0.490	0.359	0.392	0.429	0.532	0.404	0.078	**0.863**	0.368	0.418	-0.049
PV3	0.443	0.284	0.335	0.475	0.419	0.348	0.108	**0.811**	0.331	0.346	-0.060
SI1	0.468	0.287	0.284	0.334	0.494	0.235	0.097	0.372	**0.848**	0.303	-0.170
SI2	0.420	0.273	0.356	0.330	0.381	0.213	0.098	0.319	**0.804**	0.294	-0.148
SI3	0.390	0.337	0.379	0.361	0.379	0.236	0.085	0.278	**0.748**	0.389	-0.245
TH1	0.480	0.170	0.247	0.397	0.315	0.356	0.076	0.319	0.344	**0.772**	-0.256
TH2	0.492	0.300	0.345	0.366	0.457	0.499	0.088	0.426	0.376	**0.829**	-0.269
TH3	0.428	0.298	0.325	0.325	0.342	0.472	0.096	0.298	0.260	**0.795**	-0.249
TH5	0.466	0.399	0.372	0.400	0.328	0.471	0.091	0.329	0.295	**0.762**	-0.187
TR3	-0.115	-0.054	-0.125	-0.092	0.068	-0.121	-0.073	-0.012	-0.081	-0.210	**0.767**
TR4	-0.231	-0.071	-0.140	-0.144	-0.158	-0.079	-0.024	-0.065	-0.209	-0.248	**0.898**
TR5	-0.146	-0.071	-0.110	-0.039	-0.059	-0.178	-0.067	-0.030	-0.260	-0.306	**0.813**

It is noted that the Fornell-Larker predictor criterion for the components of the study variables lies between 0.747 to 0.898 for all variables, which is the largest value in its longitudinal and cross-section for any other compound compared to itself. For example, the CU values are 0.844, 0.895, and 0.898 for CU1, CU2, and CU3, respectively, which are greater than the values on the same intersection of the elements.

4.6 Normality Tests

The normality tests help determine whether the data set being tested is well-modeled with a normal distribution. Those tests were used to calculate the probability of the underlying random variable having a normal distribution for the data set collected from participants.

Table 4.7. *Tests of Normality*

Factors affecting mobile shopping	**Kolmogorov-Smirnova**			**Shapiro-Wilk**		
	Statistic	Df.	Sig.	Statistic	Df	Sig.
CU	.162	486	.000	.942	486	.000
PE	.148	486	.000	.955	486	.000
EE	.242	486	.000	.899	486	.000
SI	.197	486	.000	.913	486	.000
FC	.226	486	.000	.916	486	.000
PV	.191	486	.000	.937	486	.000
HB	.095	486	.000	.974	486	.000

Table 4.7. (Continue) *Tests of Normality*

FR	.157	486	.000	.961	486	.000
TR	.184	486	.000	.951	486	.000
TH	.127	486	.000	.962	486	.000
PC	.179	486	.000	.884	486	.000
PPC	.238	486	.000	.912	486	.000
Overall	**.050**	**486**	**.006**	**.996**	**486**	**.256**

a. Lilliefors Significance Correction

Table 4.7 noted the results of the Kolmogorov-Smirnov and Shapiro-Wilk tests. They are two well-known tests of normality. It can be seen that the P-value of the Kolmogorov-Smirnov and Shapiro-Wilk tests is less than ($\alpha = 0.05$), which indicates that the data deviate significantly from the normal distribution. Hence, it is necessary to use nonparametric tests.

This study is based on a comparison between groups. Sarstedt et al. (2011) emphasized that it should be the optimal test for differences between multiple groups within the framework of PLS pathway modeling that maintains the familywise error rate, in addition to providing an acceptable level of statistical power, and that it does not Depend on distribution assumptions. Furthermore, it was noted in Hair et al's (2009) book that previous research suggested the parametric approach tended to be rather liberal and prone to type I errors (Sarstedt et al., 2011). Additionally, the authors point out that the parametric approach has numerous limitations since it relies on distribution assumptions, which cannot be reconciled with the nonparametric tests of PLS-SEM. Sarstedt et al. (2011) added another desirable feature that such a test should be available in PLS path modeling software packages. A similar finding was obtained by Venkatesh et al. 2012, who carried out a test of the model using partial least squares (PLS) as they have quite a few interaction terms in the model, and PLS allows testing for these interactions (Chin et al. 2003).

4.7 Assessment of Variance in the Endogenous Latent Variables

As stated previously, the assessment of variances in endogenous latent variables is a critical criterion for the evaluation of the structural model in PLS-SEM by the R

squared value, also known as the coefficient of determination (Hair et al., 2012; Henseler et al., 2009). In other words, the R-squared metric identifies the proportion of variance in the dependent variable that can be explained by any one, or multiple variables (Elliott and Woodward, 2007; Hair et al., 2010). Taking into account Chin's (1998)'s suggestion, the R-squared values of 0.67, 0.33, and 0.19 in PLS-SEM can be considered intrinsic, moderate, and weak, respectively. The level of R2 that is considered acceptable, however, depends on the research context (Hair et al., 2010).

Cohen's f-squared was calculated by calculating changes in R-squared (Chin, 1998) as a means of checking the effect size of each of the main effect variables. Small and medium f-square effects are commonly referred to by conventions as 0.02, 0.15, and 0.35. On the other hand, the f-squared effect size indicates the relative influence of an external latent variable on the internal latent variables.

Table 4.8. *R Square of the Endogenous Latent Variable and F Square*

	Behaviour Intention	Result
R Square	0.626	Medium
R Square Adjusted	0.623	Medium
Effort Expectancy	0.004	No
Facilitating Conditions	0.004	No
Habit	0.175	Medium
Performance Expectancy	0.050	Small
Possession Convenience	0.001	No
Post Purchase Convenience	0.006	No
Price Value	0.015	No
Social Influence	0.034	Small
Trust	0.077	Small
Financial Risk	0.006	No
Time Risk	0.009	No

It is noted from Table 4.8 that the value of R squared was (0.626), which is the ability of the independent variables designed for this study to explain the dependent variable (acceptance and use of mobile shopping) shown in the structural model developed for this study. This ratio is considered moderate, meaning that it lies between (0.67), and (0.33), according to Chin (1998).

It is noted that the effect of F square for each variable in its ability to explain the impact on the dependent variable is different, as it states that the size of the impact is Medium in HB on (CU). It has a weak influence on each PE, SI, and TR, while there is no explanation for the effects of the remaining variables, EE, FS, PC, PPC, FR, and TR on CU. Since this model is a proposed model, it tries to find explanations for the relationships between the variables mentioned in the study.

4.8 Predictive Relevance Index

To determine a model's predictive validity, its predictive relevance (Q2) must be assessed (Chin 1998a). It refers to the ability of the proposed study model to predict or measure the behaviour intention of mobile shopping by Libyan shoppers, and the values of Q2 should be above zero. So, the process of highlighting the critical roles of analyses and their predictive relevance is vital in scientific research. (Akter et al., 2011). From Table No. 4.9 it is noted that the predictive relevance Q2 value is 0.473, which is higher than the zero critical value, which indicates that the proposed study model can make predictions.

Table 4.9. *Predictive Relevance Q2*

	SSO	SSE	Q^2 (=1-SSE/SSO)
Behaviour Intention	2118.000	1117.202	0.473
Effort Expectancy	2824.000	2824.000	
Facilitating Conditions	2118.000	2118.000	
Habit	2824.000	2824.000	
Performance Expectancy_	2824.000	2824.000	
Possession Convenience	2824.000	2824.000	
Post Purchase Convenience_	2118.000	2118.000	
Price Value	2118.000	2118.000	
Social Influence	2118.000	2118.000	
Trust	2824.000	2824.000	
Time Risk	2118.000	2118.000	

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Chapter 5: RESULTS

In this chapter, descriptive statistical analyses will be addressed to describe the study sample and inferential statistical analyses for the purpose of testing the study's hypotheses, to determine the results of the research, and according to the results recommendations will be listed.

5.1 General Information (Demographical Crosstab)

5.1.1 Age

The age factor is an important component when analyzing data collected from respondents. To further explain respondents' views on the acceptance and use of mobile shopping, certain demographic information may be useful in explaining the acceptance and use of mobile shopping.

Table 5.1. *Age*

Age	Frequency	Percent
from 18 to less than 25	119	17
from 25 to less than 35	233	33
from 35 to less than 45	204	29
from 45 to less than 55	118	16
from 55 and over	32	5
Total	**706**	**100**

From the above table 5.1 it can be seen that (62%) of the participants were from the second and third groups, whose ages ranged from 25 to 45 years. Hence, the opinions of these age groups and other target groups can be understood as being rational enough to do mobile shopping.

5.1.2 Education

The Education factor is also an important element. Some demographic information might be helpful in giving more explanations and interpretations to accept and use mobile shopping.

Table 5.2. *Education*

Education	Frequency	Percent
Elementary	6	1
Secondary	86	12
University or equivalent	477	68
Master's or equivalent	94	13
Doctorate	43	6
Total	**706**	**100**

From the above table 5.2 it can be seen that more than (87%) of them hold qualification certificates ranging from BSC to PhD, while the remaining percentage (13%) hold a high school diploma or less than it. Hence, participants are expected to be more qualified to accept and use mobile shopping.

5.1.3 Income

The income factor is one of the demographic indicators collected. The reason for collecting these details is to see if this item impacts respondents' responses regarding the acceptance and use of mobile shopping.

Table 5.3. *Income*

Income	Frequency	Percent
less than 1,000LD	392	55
from 1,000LD to less than 2,000LD	167	24
from 2,000 to less than 3,000LD	86	12
from 3,000LD and more	61	9
Total	**706**	**100**

From the table 5.3, it can be seen that (55%) of the participating respondents receive a monthly income of less than (1000) LD, while the remaining (45%) receive more income.

5.1.4 Region

Region of residence is demographic information that may be useful in explaining the acceptance and use of mobile shopping by study participants.

Table 5.4. *Region*

Region	Frequency	Percent
Eastern Region	387	55
Western Region	215	30
Southern Region	104	15
Total	706	100

From the above table 5.4, it can be seen that (55%) of the participating sample were from the eastern region of Libya. In comparison (45%) were received from the respondents who live in the cities of the western and southern regions.

5.2 General Questions Related to Mobile Shopping

Some descriptive statistics obtained from the participants will be presented in this part. These questions reflect some indications related to the process of accepting and using mobile shopping.

5.2.1 The Highest Price Was Paid for a Product

The price factor is an important element when analyzing data collected from respondents. Some information about the highest price of products purchased may be useful in explaining the acceptance and use of mobile shopping.

Table 5.5. *Highest Price was Paid for a Product*

Price	Frequency	Percent
Less than 100 LD	619	91
More than 100 LD	94	9
Total	**683**	**100**

From the above table 5.5, it is clear that (91%) of the participating sample had paid less than 100 LD when they shopped on their mobile phone, while (9%) of the respondents paid more than 100 LD.

5.2.2 The Last Time the Purchase Was Made

The time factor of the purchase process is an important element when analysing data collected from respondents. It may reflect certain information about the continuity of the purchase of products using mobile shopping.

Table 5.6. *Last Time the Purchase was Made*

Last Purchased	Frequency	Percent
Less than a week ago	135	21
Less than a month ago	131	20
Less than 3 months ago	134	20
Less than 6 months ago	80	12
Less than a year	173	27
Total	**653**	**100**

From the table 5.6 above, it can be seen that more than (60%) of the participants were from the first three groups who made the process of shopping and purchasing using mobile shopping between Less than a week ago, Less than a month ago and Less than (3) months Les ago.

5.2.3 The Kind of Mobile Device That Use to Do Online Shopping

The kind of mobile device is another element. It may have some helpful information in explaining and interpretations the acceptance and use of mobile shopping.

Table 5.7. *Kind of Mobile Device*

Kind of Mobile Device	Frequency	Percent
Apple	112	16
Samsung	439	64
Huawei	49	7
Xiaomi	51	8
Other	33	7
Total	**684**	**100**

From the above table 5.7, it can be seen that a percentage (64%) of the participants are those who use Samsung devices, while the percentage of users of Apple devices was (16%), the others use other devices.

5.2.4 The Number of Times Doing Mobile Shopping per Month

Mobile shopping during the month indicates continued acceptance and use of mobile shopping. It may also contain helpful information to provide further explanation for this study.

Table 5.8. *Number of Times Doing Mobile Shopping per Month*

The answers	Frequency	Percent
Less than 5	546	82
More than 5	119	18
Total	**665**	**100**

From Table 5.8 above, it can be seen that (82%) of the participants do the shopping and buying process less than five times per month, while (18%) of the participants do the shopping and buying process using a mobile phone more than five times per month.

5.2.5 Shopping From Other Countries

The use of the mobile phone for shopping in other countries is an important element in explaining the interpretations that may arise from the process of accepting and using mobile shopping in other countries compared to the home country, also, it may contain helpful information in providing further explanation for this study.

Table 5.9. *Shopping from Other Countries*

The Answers	Frequency	Percent
Yes	205	29
No	493	71
Total	698	100

From Table 5.9 above, it can be noted that (71%) of the participants are those who shop from within the home country, while 29% of the participants do the shopping process from other places in addition to the home country.

5.2.6 Searching From other Countries

The use of mobile shopping to search for products from other countries is also an essential element in explaining the interpretations that may arise from the process of accepting and using mobile shopping in other countries compared to the home country. Also, it may contain helpful information in providing further explanation for this study.

Table 5.10. *Searching from other Countries*

The Answers	Frequency	Percent
Yes	335	47.5
No	371	52.5
Total	**706**	**100**

From Table 5.10 above, it can be seen that (52.5%) of the participants are those who search for products from within their home country, while 27.5% of the participants search for products from other places in addition to their home country.

5.2.7 Pay for Delivering Product

Another essential element in explaining the interpretations that may arise from the process of accepting and using mobile shopping by participants is the payment for the delivery process. It may contain information helpful in providing further explanation.

Table 5.11. *Pay for Delivering product*

The answers	Frequency	Percent
Yes	463	66
No	237	34
Total	700	100

Table 5.11 above shows that (66%) of the participants pay for the delivery of orders for products purchased through mobile shopping. In comparison, 34% of the participants do not pay or receive the products without a delivery cost.

5.2.8 Amount paid for delivery

Another important element in explaining the interpretations that may arise from accepting and using mobile shopping by the participants is how much it costs to pay for the delivery, according to the previous table 463 pay for the delivery.

Table 5.12. *Amount paid for delivery*

The answers	Frequency	Percent
Less than 15 LD	190	41
Less than 30 LD	227	49
More than 30 LD	46	10
Total	463	100

From the above table, it is noted that (41%) of the participants pay less than 15 LD for the delivery of orders for products purchased through mobile shopping, while 49% of the participants pay less than 15 LD for the delivery of orders for Products purchased through mobile shopping.

5.2.9 **Processing time** for **Delivery**

The time taken to deliver orders when purchased using mobile shopping may also explain some of the interpretations that may arise from the process of accepting and using mobile shopping by participants.

Table 5.13. *Processing for Delivery*

The answers	Frequency	Percent
Within a day or two days	268	40
In a week	332	49
More than a week	74	11
Total	674	100

From Table 5.13 above, it is noted that a total of (89%) of the participants received the orders that they purchased using mobile shopping within two days or a week, while 11% of the participants received their orders within more than a week.

5.2.10 Study variables' Mean Scores

Since the main objective of this study is to find out the factors affecting the acceptance and use of mobile shopping by Libyan shoppers, the following table shows the average scores generated by the analysed data.

Table 5.14. *Study Variables' Mean Scores*

Descriptive Statistics			
Factors Affecting Mobile Shopping	N	Mean	Std. D
Behaviour Intention	693	3.6460	.74388
Effort Expectancy	706	4.0390	.58002
Facilitating_Conditions	697	3.8819	.64815
Habit	691	3.3195	.81453
Social_Influence	554	3.7545	.61453
Performance_Expectancy	706	3.8849	.64532
Price Value	693	3.6671	.70449
Financial_Risk	686	2.8980	.74283
Time Risk	697	3.0450	.80322
Trust	685	3.4204	.67974
Possession_Convenience	692	3.6658	.66658
Post_purchase Convenience	692	3.5910	.71725
Overall	486	3.6162	.37030

Table 5.14 shows that the general level of factors affecting the acceptance and use of mobile shopping is slightly high, reaching (3.62) out of five on the Likert scale. The only marginally lower factor was the Financial Risk factor, which came to (2.898) out of five on the Likert scale. This may indicate a modest level of influence in the acceptance and use of mobile shopping. To show the averages of the items' components of the measuring instrument, the table is attached below.

Table 5.15. *Descriptive Statistics of measuring items*

Items	N	Min	Max	Mean	Std. D	Variance
PE1	706	2.00	5.00	3.9618	.81473	.664
PE2	706	2.00	5.00	3.9419	.73862	.546
PE3	706	2.00	5.00	3.9929	.75977	.577
PE4	706	2.00	5.00	3.6431	.77739	.604
EE1	706	2.00	5.00	4.1020	.65737	.432
EE2	706	1.00	5.00	3.9561	.75479	.570
EE3	706	2.00	5.00	4.0765	.67778	.459
EE4	706	1.00	5.00	4.0212	.74442	.554
SI1	695	1.00	5.00	3.7899	.76234	.581
SI2	691	1.00	5.00	3.6049	.76816	.590
SI3	689	1.00	5.00	3.7779	.69364	.481
FC1	706	1.00	5.00	3.8187	.82065	.673
FC2	705	1.00	5.00	3.9404	.75331	.567
FC3	705	1.00	5.00	3.8738	.78676	.619
PV1	704	1.00	5.00	3.5369	.92464	.855
PV2	706	1.00	5.00	3.7436	.81528	.665
PV3	702	2.00	5.00	3.7179	.82762	.685
HB1	704	1.00	5.00	3.4659	.97711	.955
HB2	705	1.00	5.00	3.0014	1.04921	1.101
HB3	705	1.00	5.00	3.2780	.95756	.917
HB4	704	1.00	5.00	3.5369	.94141	.886
CU1	706	1.00	5.00	3.7266	.79915	.639
CU2	705	1.00	5.00	3.6113	.88510	.783
CU3	705	1.00	5.00	3.5929	.84960	.722

Table 5.15. (Continue) *Descriptive Statistics of measuring items*

FR1	706	1.00	5.00	2.9065	.99490	.990
FR2	705	1.00	5.00	2.9801	.96068	.923
FR3	704	1.00	5.00	2.8310	.96958	.940
FR4	703	1.00	5.00	3.0797	1.02222	1.045
FR5	705	1.00	5.00	2.7348	1.02898	1.059
TR1	705	1.00	5.00	3.0128	.94665	.896
TR2	706	1.00	5.00	2.9093	.96035	.922
TR3	705	1.00	5.00	3.2227	.97412	.949
TH2	699	1.00	5.00	3.4120	.83558	.698
TH3	700	1.00	5.00	3.5743	.78900	.623
TH4	693	1.00	5.00	3.5916	.79688	.635
TH5	703	1.00	5.00	3.5789	.80893	.654
PC1	703	1.00	5.00	3.8421	.76560	.586
PC2	700	1.00	5.00	3.8471	.79757	.636
PC3	701	1.00	5.00	3.3623	.94715	.897
PC4	701	1.00	5.00	3.6234	.82339	.678
PC1	701	1.00	5.00	3.4907	.91588	.839
PC2	703	1.00	5.00	3.8222	.66536	.443
PC3	701	1.00	5.00	3.4722	.92018	.847

From the table 5.15, it is noted that most of the elements' averages are above the average, except for the items FR1, FR2, FR3, FR5, TR2, and this probably indicates the modest level of these items in influencing the acceptance and use of mobile shopping. As noted from the table that the standard deviation of items PV1, HB1, HB2, HB3, HB4, FR1, FR2, FR3, FR4, FR5, TR1, TR2, TR3, PC3, PC1, PC3 are above a quarter of the mean for each item, which indicates a scattering of data in these items.

5.3 Hypotheses

Research hypothesis testing is an essential aspect of most scientific research. In this part, the relevant hypotheses that have been developed will be tested based on non-standard statistical methods. The hypotheses of the study will be divided into two groups. The first group will be customized for testing the hypotheses that have a direct

relationship with acceptance and using mobile shopping, which are the first hypotheses for all study hypotheses, while the second group of the hypotheses will be customized for testing the impact of demographic elements as intermediate variables on the acceptance and use of mobile shopping. Table 5.16 shows the hypotheses of the formulated study that assume a direct effect.

Table 5.16. *The Research Hypotheses (Direct Effect)*

Hypothesis Statement
H1.1: Performance expectancy positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H2.1: Effort expectancy positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H3.1: Social influence positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H4.1: Facilitating conditions positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H5.1: Price Value positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H6.1: Habit positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H7.1: Performance risk will affect negatively on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H8.1: Financial risk will affect negatively on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers
H9.1: Time risk will affect negatively on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H10.1: Trust positively influences on the behavior intention of mobile shopping to purchase small home appliances by Libyan shoppers.
H11.1: Possession convenience positively affects the Behaviour intention of mobile shopping for small household appliances by Libyan shoppers.
H12.1: Post Possession convenience positively affects the Behaviour intention of mobile shopping for small household appliances by Libyan shoppers

Table 5.17. shows the formulated hypotheses of the study with indirect influence and related to the moderation variables.

Table 5.17. *The Mediation effect Hypotheses*

Hypothesis Statement
H1.2: The influence of performance expectancy on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age, and income and, such that the effect will be stronger for younger with higher-income earners.
H2.2: The influence of effort expectancy on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age and income, such that the effect will be stronger for older with higher-income earners.
H3.2: The influence of social influence on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers will be moderated by age and income, such that the effect will be stronger for older with higher-income earners.
H4.2: Age and income will moderate the effect of facilitating conditions on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older with higher-income earners.
H5.2: Age and income will moderate the effect of price value on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older with lower-income earners.
H6.2: Age and income will moderate the effect of habit on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger among older with higher-income earners.
H7.2: Age and income will moderate the effect of Performance risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older with higher-income earners.

Table 5.17. (Continue) *The Mediation effect Hypotheses*

H8.2: Age and income will moderate the effect of financial risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older with higher-income earners.
H9.2: Age and income will moderate the effect of Time risk on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect will be stronger for older with higher-income earners.
H10.2: Age and income will moderate the effect of trust on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers. such that the effect will be stronger for younger with lower -income earners.
H11.2: Age and income will moderate the effect of Possession convenience on Behaviour intention of mobile shopping for the purchase of small household appliances by Libyan shoppers, so that the effect is stronger among older with higher-income earners.
H12.2: Age and income will moderate the effect of Post possession convenience on Behaviour intention of mobile shopping for the purchase of small household appliances by Libyan shoppers, so that the effect is stronger among older with higher-income earners.

5.3.1 Testing the Direct Impact on BI of Mobile Shopping

Before conducting a study hypothesis test, a global of fit measure test must be performed. A global of fit measure called GoF is the geometric mean of both the average variance extracted from the sample (AVE) as well as the average R^2 value of endogenous variables, according to Tenenhaus et al. (2005). GoF is used to account for the study model at both levels, namely measurement and structural model with an emphasis on the overall performance of the model (Henseler and Sarstedt, 2013). Schröder and Oppen (2009) have given criteria of goodness of fit of the mold (GoF) to determine whether GoF values are no fit, small, medium, or large, Table 5.18 shows these criteria.

Table 5.18 *Criteria of Model fit indices*

Value of GoF	Fit Validity
GoF less then 0.1	No fit
GoF between 0.1 to 0.25	Small
GoF between 0.25 to 0.36	Medium
GoF grearter than 0,36	Large

By applying this measure to the study model, a set of values were obtained, shown in Table 5.19 where it is noted that it was be found within their recommended level, which is higher than determined by Schröder and Oppen (2009), so it can be concluded That the GoF model for this study is sufficiently large according to the criteria of goodness of fit determined by Schröder and Oppen (2009). On the other hand, Hair et al. (2017) indicated that an SRMR value of less than 0.08 indicates a good fit, which in turn gives more indication that the study model can be reliable, as the SRMR value is 0.068.

Table 5.19. *Model fit indices of direct effect of study model*

	Saturated model	Estimated model
SRMR	0.068	0.068
d_ULS	4.428	4.428
d_G	1.938	1.938
Chi-square	6209.124	6209.124
NFI	0.645	0.645

The analysis will use structural equation modelling (SEM) to examine the hypotheses (11) that are directly related to the acceptance and use of mobile shopping by the Libyan market in this part, where SEM is defined as a statistical technique developed to test and estimate the assumed relationships in a given conceptual model, to enable the researcher to identify and manipulate potential associations between independent and dependent variables (Gefen et al., 2000). SEM was identified by Hair et al. (2017) as a second-generation multivariate to provide an approach to the simultaneous estimation of multiple relationships via a hybrid method derived from multiple regression and factor analysis, which offers exploration and confirmation of the results. Additionally, similar to this study, other studies have utilized this method in the analysis process. Based on the suitability of this particular approach, this study employed the SEM approach, by using

the application (Smart Pls version 3.0 and 4.0) to analyse the data of the proposed model. The following table presents the hypotheses that will be tested in this section.

Table 5.20. Effects on Endogenous Variables (Direct Effects)

Relationship	Std. B	Std. Error	Std. Dev	T Value	P Values	Decision
PE -> BI	0.208	0.204	0.034	6.108	0.000	Supported**
EE -> BI	0.052	0.053	0.038	1.364	0.173	Unsupported
SI -> BI	0.145	0.144	0.036	4.002	0.000	Supported**
FC -> BI	-0.044	-0.042	0.045	0.974	0.33	Unsupported
PV -> BI	0.1	0.101	0.035	2.89	0.004	Supported**
HB -> BI	0.323	0.325	0.035	9.295	0.000	Supported**
FR -> BI	0.044	0.046	0.029	1.51	0.131	Unsupported
TR -> BI	-0.061	-0.062	0.027	2.304	0.021	Supported*
TH -> BI	0.227	0.226	0.034	6.779	0.000	Supported**
PC -> BI	-0.032	-0.031	0.035	0.929	0.353	Unsupported
PPC -> BI	0.034	0.035	0.023	1.484	0.138	Unsupported

Significant at p**= < 0.01, p* < 0.05

Table 5.20 shows the results of the direct impact test of the study model. Although several tests were used to examine the study model that showed adequate indicators and results, some hypotheses for this model were rejected. According to table 5.20 six out of 11 hypotheses were confirmed.

As shown in the table above, these paths: Performance Expectancy (H1.1: PE -> BI, $\beta = 0.208$, $t = 6.108$, $P = 0.000$). Social Influence (H3.1: SI -> BI, $\beta = 0.145$, $t = 4.002$, $P = 0.000$). Price Value (H5.1: PV -> BI, $\beta = 0.1$, $t = 2.89$, $P = 0.004$). Habit (H6.1: HB -> BI, = 0.323, $t = 9.295$, $P = 0.000$). Time Risk (H9.1: TR -> BI, $\beta = -0.061$, $t = 2.304$ $P = 0.021$). Trust (H10.1: TH -> BI, $\beta = 0.227$, $t = 6.779$, $P = 0.000$)., affect the acceptance and continuance use of mobile shopping. That is, Performance Expectancy, Social Influence, Price Value, Habit, Time Risk and Trust are significant in influencing the acceptance and continuity of mobile shopping, for which these hypotheses are considered significant.

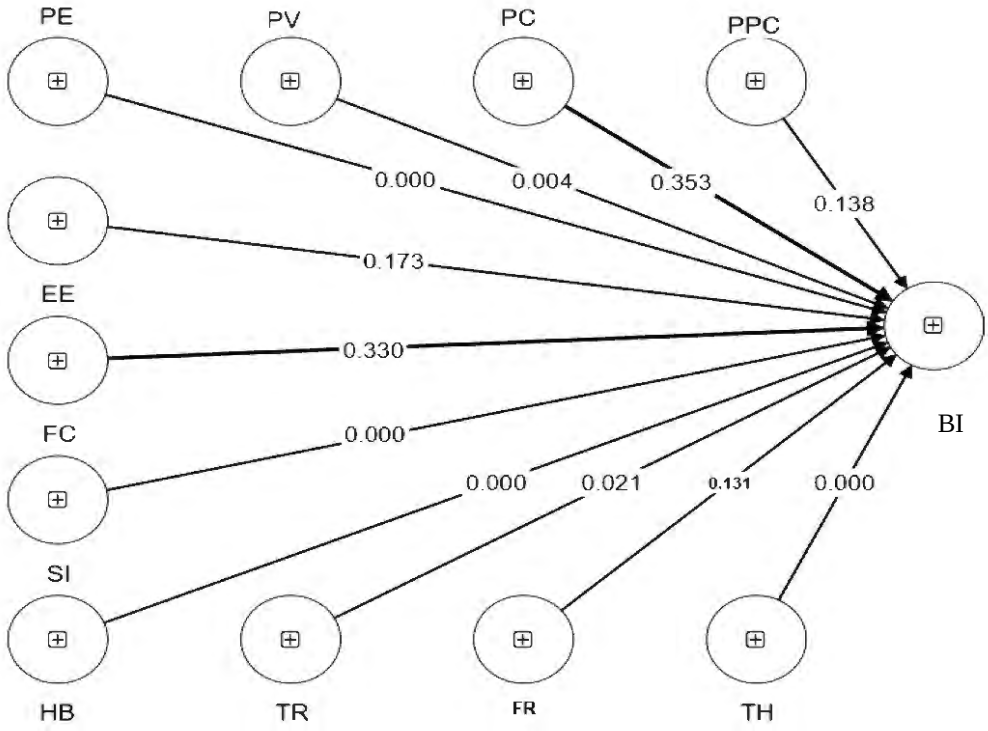

Figure 5.1. *Effects on Endogenous Variables (Direct Effects)*

5.3.2 Testing the Moderating Effect of Demographic Variables on BI of Mobile Shopping

In this part, the effect of the moderate variable of age and income on the variables dependent on the study will be tested. Dawson (2014) Moderation refers to how much an independent variable affects a dependent variable based on the value of the median variable. Moderation models attempt to explain or predict 'when' or 'to whom' explains the variable strongly or causes the outcome variable (Frazier et al., 2004). Furthermore, moderate variables are crucial for determining whether two variables are related across groups.

5.3.2.1 Testing the Moderating Effect of Age Variable on BI of Mobile Shopping

Before testing the moderation effect of the age variable, Global of fit measure was tested in this part too, to determine the values of GoF, Table 5.21 shows these criteria.

Table 5.21. *Model fit indices of indirect effect of study model (Age)*

	Saturated model	Estimated model
SRMR	0.063	0.063
d_ULS	3.623	3.622
d_G	1.452	1.451
Chi-square	5970.043	5966.417
NFI	0.667	0.667

A set of values were obtained, shown in Table 5.21, where it is noted that value of NFI was 0.667, it was be found within recommended level. So it can be concluded That the GoF model for this study is sufficiently large according to the criteria of goodness of fit determined by Schröder and Oppen (2009). Also, the valuo of SRMR was 0.063 and it is less than 0.08, which in turn gives more indication that this model can be reliable.

As mentioned above, the purpose of this part of the study is to measure the moderating effect of age factors on the acceptance and use of mobile shopping by Libyan consumers. According to Hair et al (2017), p-values above 0.95 and less than 0.05 represent a significant difference in pathway-specific coefficient between the comparison groups

Table 5.22. *Bootstrap Analysis of Statistical Significance of Indirect Effects of Age*

	Original sample	T statistics	2.50%	97.50%	P. V	Result
AGE x PE -> BI	-0.072	2.174	-0.14	-0.005	0.030	Unsupported
AGE x EE -> BI	0.105	2.988	0.036	0.172	0.003	Supported**
AGE x SI -> BI	-0.106	3.586	-0.163	-0.045	0.000	Supported**
AGE x PV -> BI	0.044	1.144	-0.041	0.108	0.253	Unsupported
AGE x FC -> BI	-0.005	0.101	-0.089	0.107	0.920	Unsupported
AGE x HB -> BI	0.091	2.643	0.015	0.158	0.008	Supported**
AGE x FR -> BI	-0.003	0.125	-0.058	0.052	0.900	Unsupported
AGE x TR -> BI	0.028	0.879	-0.039	0.082	0.380	Unsupported
AGE x TH -> BI	0.034	0.958	-0.035	0.101	0.338	Unsupported
AGE x PC -> BI	-0.073	1.999	-0.148	-0.003	0.046	Supported**
AGE x PPC - BI	-0.001	0.029	-0.047	0.046	0.977	Unsupported

as a moderator in four paths. Effort Expectancy (H2.2: AGE x EE -> BI, β =0.105, t =0.172, P = 0.003). Social Influence (H3.2: AGE x SI -> BI, β =-0.106, t =-0.045, P = 0.000). Habit (H6.2: AGE x HB -> BI, β =0.091, t =0.158, P =0.008). Purchase Convenience: (H11.2 AGE x PC -> BI, β = -0.073, t = -0.003, P = 0.046). affect the acceptance and continuance use of mobile shopping. That is, Age had moderate the effect each of effort expectancy, social influence, habit and purchase convenience on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect was stronger among older shoppers.

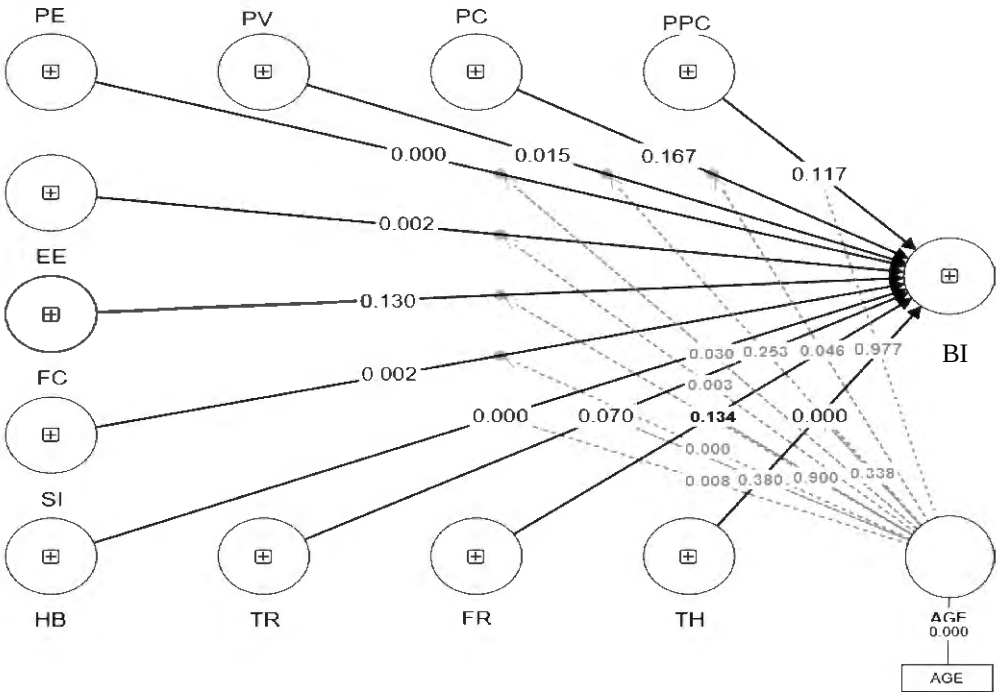

Figure 5.2 Result of Analysis of Statistical Significance of Indirect Effects of Age

5.3.2.2 Testing the Moderating Effect of Income Variable on BI of Mobile Shopping

Global of fit measure was tested before testing the moderation effect of the income variable, to determine the values of GoF. Table 5.23 shows these criteria.

Table 5.23. *Model fit indices of indirect effect of study model (Income)*

	Saturated model	Estimated model
SRMR	0.063	0.063
d_ULS	3.537	3.537
d_G	1.429	1.429
Chi-square	5870.858	5869.175
NFI	0.67	0.67

In Table 5.23 shows the value of NFI was 0.67 and it was in recommended level. So, it can be concluded the model is sufficiently large according to the criteria of goodness of fit. Also, the value of SRMR was 0.063 and it is less than 0.08, which in turn gives more indication that this model can be reliable.

In this part will be measure the moderating effect of Income factors on the acceptance and use of mobile shopping by Libyan consumers. P-values above 0.95 and less than 0.05 represent a significant difference in pathway-specific coefficient between the comparison groups.

Table 5.24. *Bootstrap Analysis of Statistical Significance of Indirect Effects of Income*

	Original sample	**T statistics**	**2.50%**	**97.50%**	**P. V**	**Result**
INCOME x PE -> CU	0.095	0.01	0.181	2.217	0.027	Supported
INCOME x EE -> CU	0.037	-0.051	0.095	0.981	0.327	Unsupported
INCOME x SI -> CU	-0.022	-0.084	0.053	0.655	0.513	Unsupported
INCOME x FC -> CU	-0.024	-0.082	0.067	0.602	0.547	Unsupported
INCOME x PV -> CU	0.046	-0.032	0.113	1.325	0.186	Unsupported
INCOME x HB -> CU	-0.025	-0.1	0.054	0.66	0.509	Unsupported
INCOME x FR -> CU	-0.05	-0.097	0.024	1.724	0.085	Unsupported
INCOME x TR -> CU	-0.04	-0.092	0.024	1.399	0.162	Unsupported
INCOME x TH -> CU	-0.023	-0.088	0.038	0.681	0.496	Unsupported
INCOME x PC -> CU	-0.041	-0.098	0.051	1.091	0.276	Unsupported
INCOME x PPC -> CU	-0.006	-0.058	0.039	0.238	0.812	Unsupported

The results in table 5.24 indicate that there is only one effect of income as a moderating variable which is performance expectancy (INCOME x PE -> BI, β =0.095, t= 2.217, P=0.027) affect the acceptance and continuance use of mobile shopping. That is, Only Income had moderate the effect of performance expectancy on the behaviour intention of mobile shopping to purchase small home appliances by Libyan shoppers, such that the effect was stronger among higher-income earners shoppers.

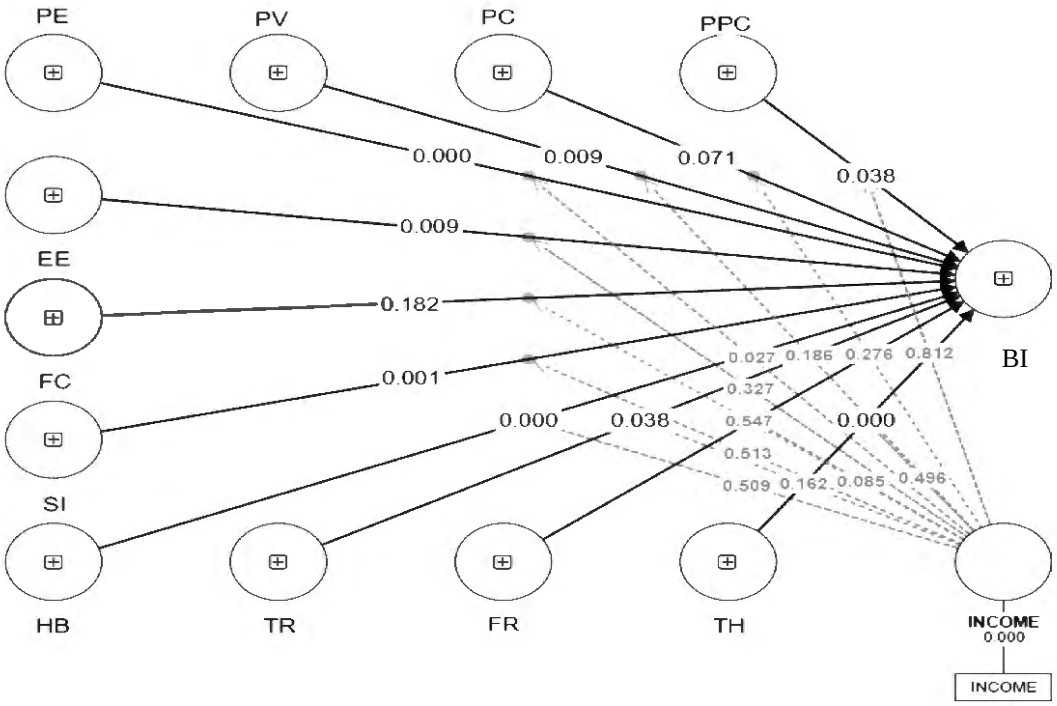

Figure 5.3 Result of Analysis of Statistical Significance of Indirect Effects of Income Variable

Chapter 6: Discussion of Results and Conclusion

In this chapter, the results of the research will be addressed, and according to the results recommendations will be listed.

6.1 Discussion of Results

Discussing the thesis results is a critical aspect of scientific research. It will be possible to compare the results of the current thesis with similar previous studies conducted elsewhere in the world. To root the topic of the issue or thesis that is currently being discussed, it is very useful to make comparisons with previous studies, thus increasing scientific research knowledge.

This thesis studied The Factors Affecting the Behaviour intention of mobile shopping by Libyan shoppers. As part of this research, UTAUT2 (Venkatesh et al., 2012) was used. In addition, the theory adds six factors: three related to risk, two to convenience, and one related to trust (Masoud, 2013; DelVecchio et al., 2005; Vekentash et al., 2005; Mahapatra, 2017). Online mobile shoppers in Libya were tested empirically with the model.

Analysis of the data showed that most of the participants' age group were 25 or older. Hence, the views of these age groups can be understood as being rational enough to accept and use mobile shopping in the Libyan context. The age ratio of the participants in the current study is far apart to make reading the comparison between them with good scientific significance. Also, more than three-quarters of the respondents hold a BSC to Ph.D. qualification, while the remainder holds a Secondary diploma; participants are expected to be more qualified to accept and use mobile shopping. In addition, more than half of the respondents had a monthly income of less than (1000) dinars. This segment may be seen as representing the largest segment of Libyan society. The majority of responses came from different locations in the three regions of Libya. Receiving answers from other cities and regions in the same country can help give an honest picture of the impact of the concept and use of mobile shopping.

The overall averages of the model variables' scores showed a marked increase above the mean. The sub-medians of the twelve proposed model variables were also significantly above the midpoint (3) on the 5-point Likert scale, except for the financial risk variable, which showed a mean value of less than (3). Despite the difference in respondents in the current study in terms of demographic variables that may have an

impact on the results of any scientific study. It was clear from the results that they have a medium effect, as all participants have views and attitudes that were sometimes similar and other times changing towards the acceptance and continuance of to use of mobile shopping. This finding may confirm the fluctuating acceptance and continuance of the use of mobile shopping by Libyan shoppers in the Libyan context.

The total frequencies showed that the price paid on products purchased using mobile shopping varied widely, as it was noted that 90% of the participants had paid 100 dinars or less in the purchase process, and the last purchase made by the participants was uneven. At similar rates between weeks, months, quarter months, and half months, with an approximate rate of 20% for most of them. On the other hand, the analysis of the data showed a wide discrepancy in the percentage of the types of devices used by the participants, as the percentage of those who own Samsung devices reached more than two-thirds, at a rate of 64%. In comparison, those who owned Apple devices amounted to 16%, and this discrepancy may reinforce the differences. Albeit in varying proportions among users due to the characteristics of the devices supported by their manufacturers.

The analysis results showed that the number of purchases made by the participants during the month was high, and this result is consistent with the studies conducted in Turkey Kalyoncuoglu, S., and Duysak, B. (2017). Also, the results of the shopping process inside the Libyan market using mobile shopping were high compared to shopping from outside the Libyan market electronically, which is similar to Senegal, according to the PayPal (2016) report. Also, two-thirds of the participants in the research paid for the delivery of products, as (90%) of them spent 30 Libyan dinars, which is equivalent to (6) dollars, at an exchange rate of ($0.25) for 1 Libyan dinar, which gives an approximate reading between the price of the purchased product and the cost of delivery. In addition, the delivery process took place within a period of not less than one day to a week from the purchase.

The variable Performance Risk was dropped entirely due to the weak loadings of the items of this variable and its weak internal correlation with the other study variables. Also, FC4 was dropped from the Facilitating Conditions variable, TH4 from Trust, and TR1, TR2, and TR6 from the Time Risk variable became the 38th questionnaire after that was 49

The major constructs of UTAUT2 were able to predict 74% of behavioral intention variance without the added variables of perceived risk, confidence, and purchase comfort. In this study, the R2 values for acceptance and continuity of use of mobile shopping decreased slightly when those variables and the UTAUT2 constructs were included in the same structural model (74% vs. 0.63% with the suggested variables). With this slight decrease, the structural model appears to have more power in predicting behavior intentions once the variants proposed are combined with the UTAUT2 constructs, once the variants are formed along with the UTAUT2 constructs. The results of this study are in line with those of Martins et al. (2014) in the article Understanding the Internet banking adoption.

Results from the study indicated that the proposed extension of the UTAUT2 was quite appropriate for the selected country. The results obtained confirm that the acceptance and continuance of use of mobile shopping are positively influenced by Habit, Performance Expectancy, Price Value, Social Influence, and Trust and negatively affected by Time Risk. In addition, the acceptance and continuance of use of mobile shopping are not influenced by Effort Expectancy, Facilitating Conditions, Possession convenience, Post Purchase Convenience, and Financial Risk. However, some significant differences can be seen between the demographic factors of the studied samples.

According to the conceptual model, the factors contributing to the Behaviour intention of mobile shopping were significantly associated with the factors affecting their acceptance and usage. Such results indicate that those shoppers were accepted and continued to use mobile shopping. As discussed previously regarding the role of Habit, Expectancy of Performance, Price Value, Social Influence, and Trust, Libyan shoppers strongly perceive mobile shopping as a more productive way to save their time, a factor that has a social influence on them to make this behavior more prevalent, and a habit that they perform when searching for products, and as an asset to assess the price of products. This, in turn, explains why the behaviour intention of mobile shopping to use by Libyan shoppers. Additionally, a strong correlation was detected between performance expectation and acceptance, as well as constant use of mobile shopping. Libyan shoppers who heavily use mobile shopping are more likely to continue dealing with mobile shopping online in the future. This may be the result of the strong relationship between mobile shopping performance expectations and acceptance and regular use, as discussed

by Alalwan et al., (2014) and Baabdullah (2018). A direct relationship was also found between Price Value and behaviour intention of mobile shopping . In comparison to the implementation of mobile shopping in all aspects, it would seem to be more important not just in terms of performance expectations, but also in terms of price value as well. The results concerning Price Value, behaviour intention of mobile shopping are in line with what has been discussed by Alalwan et al. (2018), Baabdullah (2018).

Libyan consumers are heavily influenced by their social networks when it comes to accepting and using mobile shopping. Based on the findings of this study, it is implied that social influence is affected by how other people, such as peer groups, evaluate the acceptance and continuance of mobile shopping. Regarding social influence and acceptance and constant use of mobile shopping, the results correspond to those of Yang (2010), Baabdullah (2018), Al-Sahouly (2015), and Bendary and Al-Sahouly (2016).

According to this thesis, trust has a positive effect on acceptance and continuous usage of mobile shopping, where it facilitates relationships to change and evolve and enhances mobile shopping by caring for the interests of the customer, which is consistent with the literature. The findings concerning social influence of behaviour intention on mobile shopping are in line with what Marriott (2018) has discussed.

In the conceptual model, the five factors (Effort Expectancy, Facilitating Conditions, Possession Convenience, Post Purchase Convenience, and Financial Risk) failed to predict variances in behaviour intention of mobile shopping . The finding regarding the Effort Expectancy was above the mean. However, its effect on acceptance and continued mobile shopping was not significant. The results of this study correspond to those of the study on the factors affecting online shopping adoption in the UK (Tarhini et al., 2018). According to this study, Libyan shoppers are unconcerned about the ease of use of mobile shopping, whether it be through mobile web browsing or mobile applications. Additionally, based on the characteristics of current sample participants, the majority are well educated. They are from the age groups that are equal to or older than 25 years. Hence, the views of such age groups might be understood to be rational enough to be able to use mobile shopping. Consequently, they are more likely to override any concerns regarding the level of complexity and difficulty that may arise from using mobile shopping (Alalwan et al., 2017; Venkatesh et al., 2003, 2012). The results

concerning Social influence and behaviour intention of mobile shopping are in line with (Koenig-Lewis et al., 2010; Yu, 2012).

The findings of the study indicated possession convenience and post-possession convenience were not affected by behaviour intention of mobile shopping, where possession convenience indicates purchasing efforts and include the costs of consumers in terms of time and difficulty associated with purchasing a particular product on a particular, while post-possession convenience refers to the ease with which a shopper can return products or get a refund. This may be due to the difficulty that the shopper faces in returning money or products, or the effort the shopper makes to obtain the product and send money, perhaps due to some primitive procedures for banking services, or perhaps there is a difficulty in the process of sending, receiving and returning products. On the other hand, it is observed that there is a latent across-correlation between possession convenience and Effort Expectancy equal to (0.608), which may be due to the Libyan shoppers are not concerned regarding the level of ease of use.

The findings regarding the effect of age as a moderator on effort expectancy, social influence, habit, and purchase convenience were affected by shopper ages, thus supporting the thesis hypothesis, where older are aware of the importance of the usefulness of behaviour intention of mobile shopping , despite that the benefits of behaviour intention of mobile shopping are viewed as important among younger groups, older are more aware of its importance in comparison to the younger group. Hence, it is vital to initiate awareness campaigns specifically targeted toward the younger in Libya. The awareness of the behaviour intention of mobile shopping can encourage these younger to use them more than before.

There was no effecting of age as a moderator on how to view the importance of performance Expectancy, price value, facilitating conditions, financial risk, and time risk. trust, post-purchase convenience on behaviour intention of mobile shopping. Although in some groups the mean of those variables was high, they were not significant in these variables. This may be due to the inability of older shoppers to easily access the information related to the relevant offered products, such as information regarding the quality of the offered products, the true value of prices, refund, or due to difficulty or inability to return or change products or obtain refunds, the terms of dealing and the facilities provided by the resource providers. or maybe merchants were not displaying

their products online to determine whether a particular investment or product offering improves facilitation conditions. In this sense, it will be necessary for small home appliance sellers via the internet to ensure that providing information properly with efficiency in mind. The results about performance Expectancy are in line with what has been discussed by Hilal, (2019), and price value, and facilitating conditions are in line with what has been discussed by Arrahmane, and Fatima, (2016). financial risk is in line with what has been discussed by Wai et al., (2019) and Tandon et al. (2018). time risk is in line with what has been discussed by Falahuddin et al., (2020). While the trust and post-purchase convenience results in this study contradict the study of Jain and Kaur (2020) and Daud et al., (2019) respectively.

The unexpected finding by income as a moderator of this study are that effort expectancy, social influence, price value, facilitating conditions, habit, financial risk, and time risk. trust, purchase convenience and post-purchase convenience are insignificant predictors of behaviour intention of mobile shopping . Despite this finding on the UTAUT model is in opposition to previous research (Venkatesh et al., 2003; Venkatesh and Zhang, 2010), it is in agreement with the results discussed by Tarhini et al., (2016) Yu (2012), and Koenig-Lewis et al. (2010). A possible reason may be that the difficulty in using mobile shopping by Libyan shoppers is becoming less of a concern for high-income shoppers as they become more user-friendly due to the proliferation of mobile shopping applications. It will result, therefore, that these customers will primarily use the online systems because they perceive them to be useful rather than their supposed ease of use.

The other un unexpected finding by income as a moderator of this study is that financial risk, time risk, and trust are insignificant predictors of behaviour intention of mobile shopping , which is in agreement with the results discussed by Chan et al. (2018). Perhaps this is because the expectation and reversal of trust concept by high-income earners towards mobile shopping are still vague, meaning that the trust of high-income earners toward mobile shopping is not prepared. After all, the mobile shopping process may not meet what those predictors expect. Although the internet reduces the cost of obtaining information when doing mobile shopping, it is not a priority in importance by high-income earners, perhaps because of their priority order, or there are those on their behalf in doing mobile shopping,

In the same vein, it is very interesting that possession convenience and post Possession convenience has unexpectedly emerged in this thesis as an insignificant predictor of behaviour intention of mobile shopping , whether with the effect of income earned as moderation or without it. Even though this finding is inconsistent with previous research (Jiang et al., 2013; Farida, 2016), it is in the Partially line with what has been discussed by Khan et al., (2018) and Kaura (2015A possible reason may be the due difficulty of returning the product after purchase, due to the weakness of the return channels of communication in Libya, as the communication channels have become somewhat weak, especially after the events of the Arab Spring in Libya. Furthermore, refunding money is somewhat difficult due to the large discount that is lost if the shoppers perform the recall process. Another reason may further push marketers to not be affected by the Possession Convenience and the Post Possession Convenience, perhaps due to their belief that the customer's personal information will be lost. Also, the lack of the ability to see, touch, and experience products may affect possession convenience and post Possession convenience or the difference in the price on the website compared to the price displayed on the order.

6.2 Conclusion

The thesis examined the model UTAUT2 without hedonic motivation items. The variables proposed are financial risk, time risk, performance risk, trust, purchase convenience, and post-purchase convenience to understand the affecting on behaviour intention of mobile shopping by Libya shoppers.

Based on the results of the study, it was found that each of the six constructs, which are performance expectancy, habit, price value, social influence, trust, and time risk, contributed to the behaviour intention of mobile shopping . The expectation of effort and facilitation conditions, price value, social influence, and financial risk did not contribute to the acceptance and continual use of mobile shopping.

The age variable played a moderate role in each of the effort expectations, social influence, habit and purchase convenience of behaviour intention on mobile shopping. As shoppers of older ages were affected by mobile shopping according to these paths. While there was no moderating effect of older ages with performance expectancy, price value,

facilitating conditions, financial risk, time risk, trust, and post-purchase convenience on behaviour intention of mobile shopping .

There was only one contribution of the income variable as a moderator variable with performance expectancy. While, there was no contribution from the income variable as a moderate variable on each of effort expectations, social influence, price value, facilitating conditions, habit, financial risk, time risk, trust, purchase convenience, and post-purchase convenience on behaviour intention of mobile shopping were a favor for the high incomes.

The variable Performance Risk was dropped entirely due to the weak loadings of the items of this variable and its weak internal correlation with the other study variables. Also, FC4 was dropped from the facilitating conditions variable, TH4 from trust, and TR1, TR2, and TR6 from the time risk, variable became (38) questionnaire after that was (49).

Findings also suggest the immediate implications of this thesis will be for researchers who wish to examine the behaviour intention of mobile shopping using UTAUT2 models. They will be able to consider what theoretical models to use for their research and which factors to examine and future research to conduct. The findings will also be helpful for retailers doing marketing for products by mobile apps to modify or change the strategies they use in marketing their products by mobile shopping.

6.3 Implications and Recommendations

This study is among the first that dealt with such topic in the Libyan market discussing and analyzing the factors affecting the acceptance and use of mobile shopping in Libya using the descriptive approach. Findings predict that marketing specialists and non-specialists in academic and non-academic institutions will draw on the results to better understand the Libyan market. These results could enrich the scientific horizons of researchers in marketing in general and e-marketing in particular. In addition, this thesis has a strategic value represented in discussing and understanding the behavior of the Libyan consumer towards mobile shopping, considering the general trend of the world towards digital technology, its applications, and services.

Also, findings can enlighten decision-makers in the private sector in the Libyan market to pay more attention to such services and work on developing its practices. In the same context, the current thesis targeted a group of university faculty members to identify how they accept and continue to use mobile shopping in Libya. It may also be useful in future research to replicate this study in other cities in Libya, targeting the same segments within the public or private sectors, and performing statistical comparisons with the results of this study. In conclusion, it can be very useful to adopt the concept of mobile shopping by major merchants to speed up the process of full integration with the market and the unstoppable global development.

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Appendix

Appendix 1: Questionnaire (English)

Questionnaire

I am Salah, a Ph.D. student at Anadolu University, Turkey. I kindly request you to participate in this research by completing the following questionnaire. This study aims to determine the factors affecting the behaviour intention of mobile shopping in Libya. The focus will be on small home appliances such as blenders, toasters, microwave, crock-pots, pressure cookers, lamps, electric drills, and vacuum cleaners.

This questionnaire will require approximately 5-10 minutes of your cooperation. All responses will be kept anonymous and will only be released as a part of a statistical analysis.

Thank you for your time.

Sincerely,
SALAH ABDULGADER

A. General Information.

1. Age: from 18 to less than 25 ☐from 25 to less than 35 ☐from 35 to less than 45 ☐from 45 to less than 55 ☐from 55 and over
2. Education: ☐Illiterate ☐Elementary ☐Secondary ☐University or equivalent ☐Master's or equivalent ☐ Doctorate
3. Income: ☐1000 and less ☐from 1,000LD to less than 2,000LD ☐from 2,000 to less than 3,000LD ☐ More than 3000
4. City: ☐Eastern Region ☐Western Region ☐Southern Region
5. Using online mobile shopping, what is the highest price you have paid for a product?

   ☐Less than 100 LD ☐More than 100 LD

   If you want, you can specify the highest expenditure…….”

6. what was the last thing you purchased? ……..

7. When was the last time you shopped using mobile online shopping?

   ☐Less than a week ago ☐Less than a month ago ☐Less than 3 months ago

   ☐Less than 6 months ago ☐Less than a year ago ☐More than a year

8. Which mobile device/phone brand do you use in mobile shopping?

   ☐Apple ☐Samsung ☐Huawei ☐OPPO ☐LG

   ☐Xiaomi ☐Lenovo ☐Other (Please specify……)

9. How many times do you generally make mobile shopping on a month?

   ☐Less than 5 ☐More than 5

10. Have you ever shopped for small home appliances using mobile shopping from other countries?

    ☐Yes ☐ No

11. Have you ever searched for small home appliances using mobile shopping from other countries?

    ☐Yes ☐ No

Second: Paragraphs dealing with mobile shopping.

Paragraphs		Strongly Agree	Agree	Neutral	Not agree	Strongly Disagree
Performance Expectancy						
PE1.	I find mobile shopping to buy small home appliances useful in my daily life (Venkatesh, 2012).					
PE2.	Using mobile shopping to buy small home appliances increases my chances of achieving things that are important to me (Venkatesh, 2012).					
PE3.	Using mobile shopping to buy small home appliances helps me accomplish					

	things more quickly (Venkatesh, 2012).					
PE4.	Using mobile shopping to buy small home appliances increases my productivity (Venkatesh, 2012).					
Effort Expectancy						
EE1.	Learning how to use mobile shopping to buy small home appliances is easy for me (Venkatesh, 2012).					
EE2.	My interaction with mobile shopping to buy small home appliances is clear and understandable (Venkatesh, 2012) (Venkatesh, 2012).					
EE3.	I find mobile shopping to buy small home appliances easy to use (Venkatesh, 2012).					
EE4.	It is easy for me to become skillful at using mobile shopping to buy small home appliances (Venkatesh, 2012).					
Social Influence						
SI1.	People who are important to me think that I should use mobile shopping to buy small home appliances (Venkatesh, 2012).					
SI2.	People who influence my behavior think that I should use mobile shopping to buy small home appliances (Venkatesh, 2012).					
SI3.	People whose opinions that I value prefer that I use mobile shopping to buy small home appliances (Venkatesh, 2012).					
Facilitating Conditions						

FC1.	I have the resources necessary to use mobile shopping to buy small home appliances (Venkatesh, 2012).					
FC2.	I have the knowledge necessary to use mobile shopping to buy small home appliances (Venkatesh, 2012).					
FC3.	Mobile shopping to buy small home appliances is compatible with other technologies I use (Venkatesh, 2012).					
FC4.	I can get help from others when I have difficulties using mobile shopping to buy small home appliances (Venkatesh, 2012).					
Price Value						
PV1.	Mobile shopping to buy small home appliances is reasonably priced (Venkatesh, 2012).					
PV2.	Mobile shopping to buy small home appliances is a good value for the money (Venkatesh, 2012).					
PV3.	At the current price, mobile shopping to buy small home appliances provides a good value (Venkatesh, 2012).					
Habit						
HT1.	The use of mobile shopping to buy small home appliances has become a habit for me (Venkatesh, 2012).					
HT2.	I am addicted to using mobile shopping to buy small home appliances (Venkatesh, 2012).					
HT3.	I must use mobile shopping to buy small home appliances (Venkatesh, 2012).					

HT4.	Using mobile shopping to buy small home appliances has become natural to me (Venkatesh, 2012).					
Behavioral Intention						
BI1.	I intend to continue using mobile shopping to buy small home appliances in the future (Venkatesh, 2012).					
BI2.	I will always try to use mobile shopping to buy small home appliances in my daily life (Venkatesh, 2012).					
BI3.	I plan to continue to use mobile shopping to buy small home appliances frequently (Venkatesh, 2012).					
Financial Risk						
FR1	Shopping online using mobile to buy small home appliances can involve a waste of money (Masoud, 2013).					
FR2	I feel that my credit information may not be secure if I shop online using mobile to buy small home appliances (Masoud, 2013).					
FR3	I might get overcharged if I shop online using mobile to buy small home appliances					
FR4	If I shop online using mobile to buy small home appliances, I may not get the product I want (Masoud, 2013).					
FR5	I can't trust the online company if I shop online using mobile to buy small home appliances (Masoud, 2013).					
Performance Risk.						
PR1	I am certain that using mobile shopping to buy small home appliances would					

	satisfactorily (DelVecchio et. al., 2005).					
PR2	I am likely to have problems with the performance of I using mobile shopping to buy small home appliances (DelVecchio et. al., 2005).					
PR3	If using mobile shopping to buy small home appliances, the consequences can be fairly severe (DelVecchio et. al., 2005).					
PR4	Using the wrong mobile shopping to buy small home appliances can lead to very negative outcomes (DelVecchio et. al., 2005).					
PR5	I need to be careful when using mobile shopping to buy small home appliances since a lot can go wrong when you use it (DelVecchio et. al., 2005).					
PR6	There is a little can be go wrong when using a mobile shopping to buy small home appliances (DelVecchio et. al., 2005).					
Time Risk						
TR1	1- Buying small home appliances online using mobile phone can involve a waste of time (Masoud, 2013).					
TR2	2- Difficult using mobile online shopping to find appropriate small home appliances (Masoud, 2013).					
TR3	3- Finding right small home appliances using online mobile shopping is difficult (Masoud, 2013).					
TR4	4- If I using mobile shopping to buy small home appliances, I cannot wait					

	till the product that I bought it arrives (Masoud, 2013).					
TR5	5- Too complicated to place order if I doing purchase small home appliances online using mobile phone (Masoud, 2013).					
TR6	6- Communicating with the seller may require a lot of time if I doing purchase small home appliances online using mobile phone (Masoud, 2013).					
Trust						
TS1	Mobile shopping to buy small home appliances appears to be more trustworthy than other Shopping operations (Bart et al., 2005).					
TS2	E-stores or mobile shopping companies offering small home appliances products for sale are organizations that will deliver on promises made (Bart et al., 2005).					
TS3	My overall trust in mobile shopping to buy small home appliances is good (Bart et al., 2005).					
TS4	My overall believability of the information on mobile shopping to buy small home appliances is good (Bart et al., 2005).					
TS5	My overall confidence in the recommendations on mobile shopping to buy small home appliances is good (Bart et al., 2005).					
Possession convenience						

PC1	small home appliances that I bought using mobile shopping were delivered are undamaged.					
PC2	I received all the small home appliances ordered that I bought using mobile shopping.					
PC3	small home appliances that I bought using mobile shopping delivery is timely.					
PC4	The prices of delivered small home appliances that I bought using mobile shopping are identical to those on the ordered.					
Post-purchase convenience						
PPC1	It takes little effort to return unwanted small home appliances that I bought using mobile shopping.					
PPC2	My personal information is not misused when I bought small home appliances using mobile shopping					
PPC3	I am able to provide feedback after consumption of small home appliances that I bought using mobile shopping.					

Third: Questions about delivery and e-commerce:

1. Do you pay for the delivery of small home appliances when you buy them using mobile shopping?

   ☐Yes ☐ No

2. How much do you pay for the delivery of small home appliances when you buy them using mobile shopping?

   ☐Less than 15 dinars ☐Less than 30 dinars ☐More than 30 dinars

3. How long does the order delivery process take when you buy them using mobile shopping?

☐Within a day or two days ☐In a week ☐More than a week

4. Why do you use m-commerce? Please explain with a few sentences.
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Appendix 2: Questionnaire (Arabic)

استبيان

أنا الطالب صـــالح عبد الرحمن محمد، طالب دكتوراه بجامعة الأناضـــول ، تركيا. أرجو منكم التفضـــل بالمشـاركة في هذا البحث من خلال اسـتكمال الاسـتبيان التالي. تهدف هذه الدراسـة إلى تحديد العوامل المؤثرة على قبول واستمرار استخدام التسوق المحمول في ليبيا. سيكون التركيز على الأجهزة المنزلية الصغيرة مثل الخلاطات، والمحمصات، والميكروويف، وأواني الطهي بالضغط، والمصابيح، والمثاقب الكهربائية، والمكانس الكهربائية.

ســـيتطلب هذا الاســـتبيان ما يقرب من 5-10 دقائق من تعاونك. ســـيتم الاحتفاظ بجميع الردود مجهولة المصدر ولن يتم إصدارها إلا كجزء من التحليل الإحصائي.

شكرا لوقتك.

صلاح عبد الرحمن محمد عبد القادر

أولا: معلومات عامة.

1- **العمر**: ☐ أقل من 18 ☐ من 18 إلى أقل من 35 ☐ من 35 إلى أقل من 45

☐ من 45 إلى أقل من 55 ☐ من 55 إلى أقل من 65 ☐ من 65 فأكثر

2- **التعليم**: ☐ أمي ☐ ابتدائي ☐ ثانوي

☐ جامعي أو ما يعادله ☐ ماجستير أو ما يعادله ☐ دكتوراه

3- **الدخل**: ☐ أقل من 1000دينار ☐ من 1000 إلى أقل من 2000

☐ من 2000 إلى أقل من 3000 ☐ من 3000 فأكثر

4- **المدينة**: ☐ المنطقة الشرقية ☐ المنطقة الغربية ☐ المنطقة الجنوبية

5- باستخدام التسوق عبر الإنترنت عبر الهاتف المحمول ، ما هو أعلى سعر دفعته مقابل منتج ما؟

☐ أقل من 100 دينار ☐ أكثر من 100 دينار ☐ يمكنك تحديد أعلى إنفاق ..... "

6- ما هو آخر شيء اشتريته؟ ....

7- متى كانت آخر مرة تسوقت فيها باستخدام التسوق عبر الإنترنت عبر الهاتف المحمول؟

☐ أقل من أسبوع مضى ☐ أقل من شهر مضى ☐أقل من 3 أشهر

☐ أقل من 6 أشهر ☐ منذ أقل من عام ☐ أكثر من عام

8- ما هي العلامة التجارية للجهاز / الهاتف المحمول الذي تستخدمه في التسوق عبر الأجهزة المحمولة؟

☐أبل ☐سامسونج ☐هواوي ☐OPPO ☐إل جي

☐ Xiaomi ☐ Lenovo ☐غير ذلك (يرجى التحديد .....)

9- كم مرة تقوم فيها بالتسوق عبر الهاتف المحمول بشكل عام في الشهر؟

☐ أقل من 5 مرات ☐ أكثر من 5 مرات

10- هل سبق لك التسوق لشراء الأجهزة المنزلية الصغيرة باستخدام التسوق المحمول من دول أخرى؟

☐ نعم ☐ لا

11- هل سبق لك أن بحثت عن أجهزة منزلية صغيرة باستخدام التسوق المحمول من دول أخرى؟

☐ نعم ☐ لا

ثانيًا: فقرات خاصة بالتسوق عبر الجوال.

	الفقرات	موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة
نوقع الأداء						
1	أجد التسوق من خلال الهاتف المحمول مفيدًا في حياتي اليومية.					
2	يزيد استخدام التسوق عبر الهاتف المحمول من فرصي في تحقيق الأشياء التي تهمني.					
3	يساعدني استخدام التسوق عبر الهاتف المحمول في إنجاز الأشياء بسرعة أكبر.					
4	يزيد استخدام التسوق عبر الهاتف المحمول من إنتاجيتي.					
توقع الجهد						
1	تعلم كيفية استخدام التسوق عبر الهاتف المحمول سهل بالنسبة لي.					
2	تفاعلي مع التسوق عبر الهاتف المحمول واضح ومفهوم.					
3	أجد التسوق عبر الهاتف المحمول سهل الاستخدام.					
4	من السهل بالنسبة لي أن أصبح ماهرًا في استخدام التسوق عبر الهاتف المحمول.					

التأثير الاجتماعي						
1	يعتقد الأشـخاص المهمون بالنسـبة لي أنه يجب علي اسـتخدام التسوق عبر الأجهزة المحمولة.					
2	يعتقد الأشـخاص الذين يؤثرون في سـلوكي أنه يجب علي استخدام التسوق عبر الأجهزة المحمولة.					
3	الأشـخاص الذين أقدر ارائهم يفضـلون اسـتخدام التسـوق عبر الهاتف المحمول.					
تسهيل الظروف						
1	لدي الموارد اللازمة لاستخدام التسوق عبر الهاتف المحمول.					
2	لدي المعرفة اللازمة لاستخدام التسوق عبر الهاتف المحمول.					
3	التسـوق عبر الهاتف المحمول متوافق مع التقنيات الأخرى التي أستخدمها.					
4	يمكنني الحصـول على مسـاعدة من الآخرين عندما أواجه صعوبات في استخدام التسوق عبر الهاتف المحمول.					
قيمة السعر						
1	أسـعار المنتجات عند القيام بالتسـوق عبر الهاتف المحمول تعد معقولة.					
2	التسوق عبر الهاتف المحمول هو شيء (قيمة) جيد مقابل المال.					
3	بالسعر الحالي ، يوفر التسوق عبر الأجهزة المحمولة قيمة جيدة.					
العادات						
1	أصبح استخدام التسوق عبر الهاتف المحمول عادة بالنسبة لي.					
2	أنا مدمن على استخدام التسوق عبر الهاتف المحمول.					
3	لا بد لي من استخدام التسوق المحمول.					
4	أصـبح اسـتخدام التسـوق عبر الهاتف المحمول أمرًا طبيعيًا بالنسبة لي.					
القبول والاستخدام						
1	أعتزم الاستمرار في استخدام التسوق عبر الهاتف المحمول في المستقبل.					
2	سأحاول دائمًا استخدام التسوق عبر الهاتف المحمول في حياتي اليومية.					

3	أخطط لمواصلة استخدام التسوق عبر الهاتف المحمول بشكل متكرر.					
المخاطر المالية						
1	يمكن أن يؤدي التسوق عبر الإنترنت باستخدام الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة إلى إهدار المال.					
2	أشعر أن معلوماتي الائتمانية قد لا تكون آمنة إذا قمت بالتسوق عبر الإنترنت باستخدام الهاتف المحمول لشراء أجهزة منزلية صغيرة.					
3	قد أتقاضى رسومًا زائدة إذا قمت بالتسوق عبر الإنترنت باستخدام الهاتف المحمول لشراء أجهزة منزلية صغيرة					
4	إذا كنت أتسوق عبر الإنترنت باستخدام الهاتف المحمول لشراء أجهزة منزلية صغيرة ، فقد لا أحصل على المنتج الذي أريده.					
5	لا يمكنني الوثوق في الشركة عبر الإنترنت إذا كنت أتسوق عبر الإنترنت باستخدام الهاتف المحمول لشراء أجهزة منزلية صغيرة.					
مخاطر الأداء						
1	أنا متأكد من أن استخدام التسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة سيكون مرضيًا .					
2	من المحتمل أن أواجه مشكلات في أداء استخدامي للتسوق عبر الهاتف المحمول لشراء أجهزة منزلية صغيرة .					
3	في حالة استخدام التسوق عبر الهاتف المحمول لشراء أجهزة منزلية صغيرة ، يمكن أن تكون العواقب وخيمة إلى حد ما .					
4	يمكن أن يؤدي استخدام التسوق الخاطئ عبر الهاتف المحمول لشراء أجهزة منزلية صغيرة إلى نتائج سلبية للغاية .					
5	أحتاج إلى توخي الحذر عند استخدام التسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة نظرًا لأن الكثير قد يحدث خطأ عند استخدامه .					
6	قد يكون هناك القليل من الخطأ عند استخدام التسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة .					
مخاطر الوقت						
1	قد يؤدي شراء الأجهزة المنزلية الصغيرة عبر الإنترنت باستخدام الهاتف المحمول إلى إهدار الوقت.					
2	صعوبة استخدام التسوق عبر الإنترنت عبر الهاتف المحمول للعثور على الأجهزة المنزلية الصغيرة المناسبة.					

3	يصعب العثور على الأجهزة المنزلية الصغيرة المناسبة باستخدام التسوق عبر الإنترنت عبر الهاتف المحمول.					
4	إذا كنت أستخدم التسوق عبر الهاتف المحمول لشراء أجهزة منزلية صغيرة ، فلا يمكنني الانتظار حتى وصول المنتج الذي اشتريته.					
5	-5من الصعب جدًا تقديم طلب إذا قمت بشراء أجهزة منزلية صغيرة عبر الإنترنت باستخدام الهاتف المحمول.					
6	-6قد يتطلب التواصل مع البائع الكثير من الوقت إذا قمت بشراء أجهزة منزلية صغيرة عبر الإنترنت باستخدام الهاتف المحمول.					
الثقة						
1	يبدو أن التسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة أكثر جدارة بالثقة من عمليات التسوق الأخرى.					
2	المتاجر الإلكترونية أو شركات التسوق عبر الأجهزة المحمولة التي تعرض منتجات الأجهزة المنزلية الصغيرة للبيع هي منظمات ستفي بالوعود التي قطعتها .					
3	ثقتي العامة في التسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة جيدة .					
4	إن مصداقيتي الإجمالية للمعلومات المتعلقة بالتسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة جيدة.					
5	ثقتي العامة في التوصيات المتعلقة بالتسوق عبر الهاتف المحمول لشراء الأجهزة المنزلية الصغيرة جيدة .					
راحة الشراء						
1	تم تسليم الأجهزة المنزلية الصغيرة التي اشتريتها باستخدام التسوق عبر الهاتف المحمول غير تالفة.					
2	استلمت جميع الأجهزة المنزلية الصغيرة التي طلبتها باستخدام التسوق عبر الهاتف المحمول.					
3	الأجهزة المنزلية الصغيرة التي اشتريتها باستخدام خدمة توصيل التسوق عبر الهاتف المحمول في الوقت المناسب.					
4	أسعار الأجهزة المنزلية الصغيرة التي اشتريتها باستخدام التسوق عبر الهاتف المحمول مماثلة لتلك التي تم طلبها.					
الراحة بعد الشراء						
1	لا يتطلب الأمر سوى القليل من الجهد لإعادة الأجهزة المنزلية الصغيرة غير المرغوب فيها التي اشتريتها باستخدام التسوق عبر الهاتف المحمول.					

2	لا يتم إســاءة اســتخدام معلوماتي الشــخصــية عندما أشــتري أجهزة منزلية صغيرة باستخدام التسوق عبر الهاتف المحمول					
3	يمكنني تقديم ملاحظات بعد استهلاك الأجهزة المنزلية الصغيرة التي اشتريتها باستخدام التسوق عبر الهاتف المحمول.					

ثالثًا: أسئلة حول التوصيل والتجارة الإلكترونية:

1. هل تدفع مقابل توصيل الأجهزة المنزلية الصغيرة عند شرائها باستخدام التسوق عبر الهاتف المحمول؟

☐ نعم ☐ لا

2. كم تدفع مقابل توصيل الأجهزة المنزلية الصغيرة عند شرائها باستخدام التسوق عبر الهاتف المحمول؟

☐ أقل من 15 دينار ☐ أقل من 30 دينار ☐أكثر من 30 دينارًا

3. ما هي المدة التي تستغرقها عملية تسليم الطلبات عند شرائها باستخدام التسوق عبر الهاتف المحمول؟

☐ خلال يوم أو يومين ☐في أسبوع ☐ أكثر من أسبوع

4. لماذا تستخدم التجارة الإلكترونية؟ يرجى التوضيح ببضع جمل.

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Appendix 3: Most recent studies on UTAUT2 in Arab Countries

Author	Country	Activity	Sample	Finding
Alalwan, Dwivedi, Rana, and Algharabat (2018)	Jordan	Banking via the Internet	380 in Amman and Al-Balqa	Performance expectancies, effort expectancies, hedonic motivations, price values, and perceived risks all significantly influence behavioral intentions; however, social influence is not as significant.
Alalwan, Dwivedi, Rana, and Algharabat (2018)	Jordan	mobile banking	343 Three hundred and forty-three customers from Jordanian banks	Hedonic motivation, price value, and trust all affect the behavioral intention significantly and positively.
Khan, R. (2018)	Saudi Arabia	Learning Management System		According to the findings, the most important determinant of LMS adoption is facilitating conditions, followed by performance expectations. Research shows that racial groups and technology awareness moderate the adoption of LMS
Merhi, Hone, and Tarhini, (2019).	Lebanese and British	Mobile banking	Participants from Lebanon and England comprised	For Lebanese and English consumers, social influence and hedonistic motivation were not significant.

			486 and 415 participants, respectively	For the Lebanese and English samples, the model explained 78.2% and 83.2% of the variance, respectively.
El-Masri and Tarhini 2017	Qatar and Saudi Arabia	e-learning systems	An American university and a university in Qatar each have 833 students	In both samples, behavioral intention (BI) was significantly predicted by performance expectancy, hedonic motivation, habit, and trust. Price value has no significant relationship with BI. In developing countries, students are more likely to adopt e-learning systems due to the effort expectation and social influence, but not in developed countries. Facilitating conditions increase e-learning adoption in developed countries which is not the case in developing countries.
Gharaibeh, and Arshad, (2018)	Jordan	mobile banking	579 Respondents from Irbid, Jerash and Ajloun	Media coverage, trust, effort expectation, performance expectation, social influence, and hedonic motivation all significantly influenced intention to use mobile banking.

Bendary, and Al-Sahouly, (2018)	Egypt	mobile commerce		Hedonic motivation and convenience were fully mediated by social influence. Convenience is a factor that tends to impact consumer perceptions of usefulness and ease of use. It has a strong mediation effect between social influences and user perceptions of mobile commerce.
Abushakra, and Nikbin, (2019	Oman	Internet of Things (IoT)	93 Omani entrepreneurs	Entrepreneurs' acceptance and adoption of IoT was correlated with their knowledge of information technology
Alalwan, Baabdullah, Rana, Dwivedi, and Kizgin, 2019	Jordan	Mobile Store Features	500 Jordanians use mobile stores	Results confirm that customer satisfaction is significantly impacted by customer expectation, price value, hedonistic motivation, personalization, responsiveness, and perceived security and privacy.
Singh, Alryalat, Alzubi, and Sarma, (2017)	Jordan	Online Purchase Intentions	Six different private and public universities have 284 students and	In the study, all seven constructs were significant across six hypotheses

			faculty members	
Salim, Mohamed and Khair (2016)	Sudan	Internet Banking	500 Sudanese customers	the proposed model is giving more powerful indicators than the basic model (UTAUT) and UTAUT2, and significantly contributes to understanding factors influencing the use of Internet banking in Sudan
Arrahmane, and Fatima, (2016	Kingdom of Morocco, Republic of Tunisia and Republic of Ivory Coast	Free/Libre and Open Source Software (FLOSS)	200 SMEs' managers	Behavioral Intention to use FLOSS ERP was significantly predicted by Performance Expectancy and Effort Expectancy, whereas Social Influence, Price Value and Use Behavior were statistically insignificant, as well as Facilitating Conditions, Hedonic Motivation, and Habit on UB and BI.
Alotaibi, (2018).	Saudi Arabian	Social Commerce	300 Saudi Arabian participants	there is a positive relationship between information quality and behavioral intention for adopting social commerce
Gharaibeh, Gharaibeh, Gharaibeh, and Bdour,	Jordan	Mobile Commerce	400 Jordanian consumers	Consumers' intention to adopt mobile commerce is significantly influenced by social media, social

				influence, effort expectancy, hedonic motivation, performance expectancy, habit, and facilitating conditions. Price value has no critical influence on consumers' intention to adopt mobile commerce.
N. (2018).	Egypt	Mobile Commerce		Hedonic motivation and convenience were fully implicated in social influence. In terms of Convenience, it has a strong mediation effect in social influence and mobile commerce user perceptions and it tends to affect perceptions of consumers' usefulness and ease of use.
Hilal 2019	Lebanon	Mobile Banking		Lebanese individuals' use of mobile banking was significantly influenced by six factors, including effort expectancy, facilitating conditions, hedonic motivation, need for cognition, need for structure, need for affiliation, proactive character, neuroticism, and agreeableness.

				As for performance expectancy, self-efficacy, conscientiousness, extraversion, and openness to experience, they did not significantly influence usage behavior.
Qasem 2018	Morocco, Tunisia, Bahrain, Jordan, Kuwait, Lebanon, and Oman	E-Ticketing	N/A	This study emphasized the considerable relationship between the four independent variables of the theory -- performance expectation, effort expectation, social influence, and facilitating conditions -- and intention.
Alkhaldi, and Alsadi, (2016)	Saudi Arabia	Mobile Banking	Twenty-three m-banking articles were classified	M-banking is still in its infancy stage; several implications points were highlighted.
Al-Azzam, Al-Azzam, and al-Manasra, (2019)	Jordan	M-Health	98 questionnaires	DSS' role in promoting adoption of M-Health applications is enhanced by the model as well.
Ameen, and Shah, (2018)	UAE and Jordan	Smartphone adoption	900 responses from both countries	Arab women in the UAE and Jordan were found to be significantly affected by national IT development, enjoyment, perceived relative advantage, price value and effort expectancy.

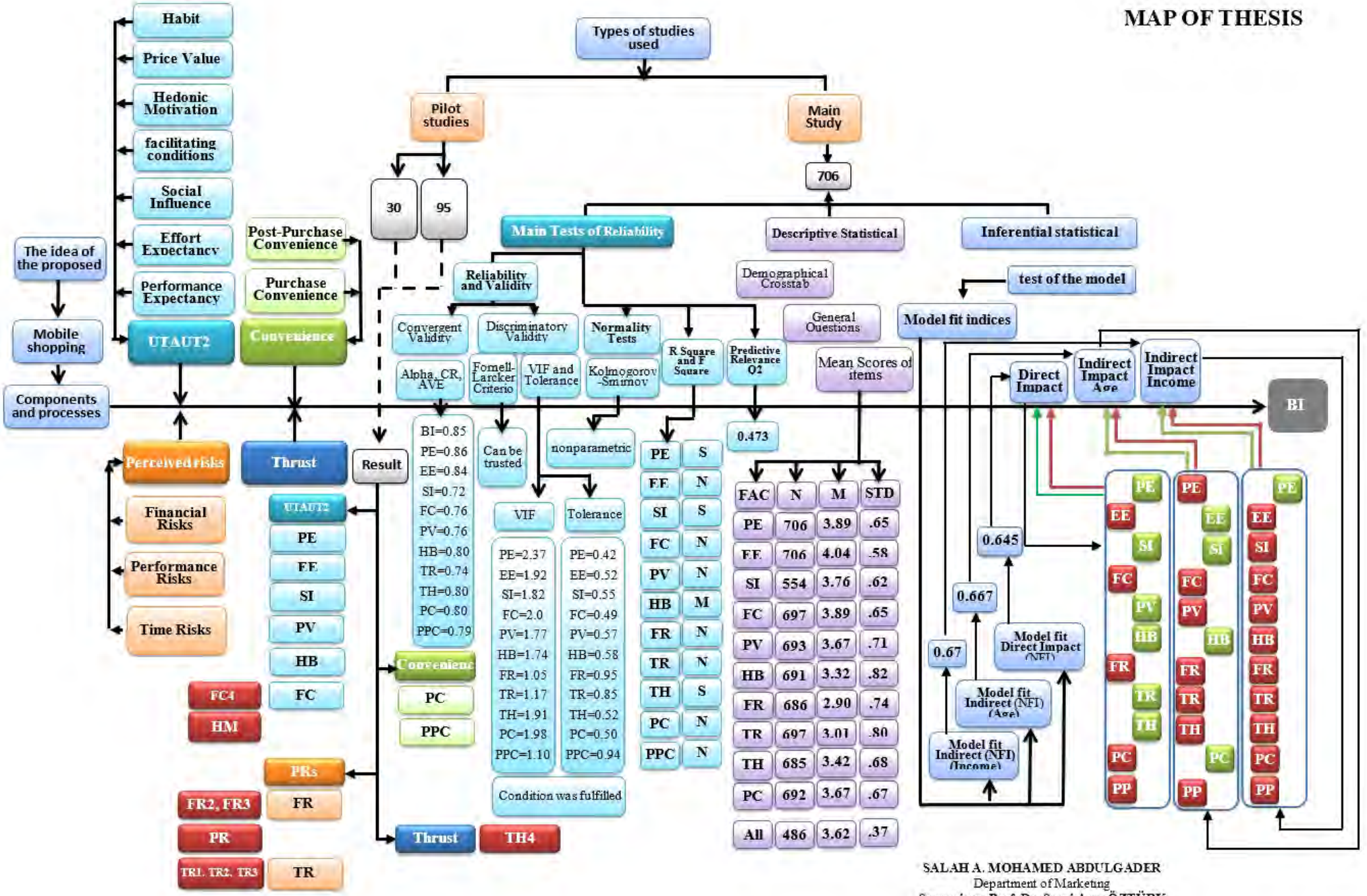
Sheikh, Rana, Hameed, and Saeed, (2017).	Saudi Arabian	Social Commerce	310 university students	In terms of behavioral intentions, performance expectations, hedonic motivation, habit, price saving orientation, social support, and social commerce constructs have positive associations. The use behavior is positively influenced by facilitating conditions, habits, and behavioral intentions. Behavioral intentions have also shown a powerful influence on use behavior through moderated results of cultural dimensions (individualism/collectivism and uncertainty avoidance).
Mafraq, and Kotb, (2019, March).	Saudi Arabian	Massive Online Open Courses MOOCs	N/A	MOOC behavioral intentions are unaffected by performance expectation, effort expectation, social influence, facilitator condition, and hedonic motivation. Users' habits hardly influence their MOOC behavior. MOOC behavioral intention is significantly

				affected by habits and self-management.
Dajani, and Hegleh, (2019)	Jordan	Animation	370 undergraduate Jordanian universities	Animation usage was significantly influenced by hedonistic motivation, performance expectation, innovativeness, learning value, and effort expectation.
Qasem, (2020).	Jordan	E-fashion retailing	315 participants	Based on the results of structural equation modeling, it was largely found that "optimism" and "innovation" played a significant role in performance expectancy and price value. Aside from effort expectancy, all factors of UTAUT2 predicted behavioral intention.
Okour, Alharbi, and Alazzam, (2019).	Saudi Arabian	Mobile Health	420 healthcare professional	The study has been eminent to positively contribute to ensuring there is professional acceptance of the MHA system use across the Saudi Arabian hospitals, primarily where EMRs uses mandatory.
Al-Azawei, and Alowayr,(2020)	Saudi Arabia and Iraq	Mobile learning	469 Four hundred and sixty-nine students are	In both countries, there are significant differences in learners' perceptions.

			studying Computer Science in higher education	
Alalwan, Dwivedi, and Williams, (2014)	Jordan	Internet banking	500 Jordanian banking customers	The results of the statistical analyses showed that all predictors of behavioral intention (BI) are significant. Among these factors, TR ranked highest in predictive ability.
Al-Okaily, Lutfi, Alsaad, Taamneh, and Alsyouf, (2020)	Jordan	Mobile Payment	270 from public sector employees	A significant and positive impact on the intention to used JoMoPay system is provided by performance expectation, social influence, price value, security, and privacy, which explained 0.612 of behavioral intention. On tht other hand, there is no evidence that culture influences the relationship between social influence and intention to use JoMoPay; hence, the related hypothesis cannot be supported.

Ameen, (2017).	Iraq, Jordan and UAE	Mobile phone adoption	1599 questionnaires were distributed in the three countries	Three countries were well suited to the extended model. There were statistically significant differences between the three countries in regards to Perceived Relative Advantage, Effort Expectancy, National IT Development, Habits, Price Value, Culture-Specific Beliefs and Values, and Behavioral Intention. Only in Iraq was Technological Culturization significant. Jordan and UAE had the most enjoyment.
Shah, and Ameen, (2019)	Iraq, Jordan and UAE	Smartphone security	A total of 533 young adults aged 18-29 from each country participated	Despite there being serious security threats associated with Arab millennials' use of these technologies, there is a lack of research on the security behavior of these young people; A lack of research on consumer behaviour when it comes to smartphone security exists in cross-national contexts.

MAP OF THESIS



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